The RUBBER AGE

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LATE NEWS of the Industry

World Rubber Stocks Show Decline Under the Prevailing Low Prices

Present Market Levels Are Slowly Forcing Upon the Producing Industry a Certain Involuntary Restriction—Litchfield Urges Five-Day Week to Help Employment

FIGURES of 615 producing companies made public by the British Rubber Growers Association show more or less substantial decreases in production by all countries except Malaya, for the first eight months of 1932 as compared with the corresponding 1931 period.

August production figures showed decreases all along the line, including Malaya, confirming the opinion of some authorities that the Malayan decrease would not show up before the second half year.

Stocks of rubber in Malaya, Great Britain, United States and afloat to the United States are estimated at 570,637 tons against peak stocks of 617,424 on February 29. The British stocks represent only 5½ months supply for Europe, while the American stocks, though equal to 14½ months supply, are mainly held by manufacturer for their own use.

While at first sight the statistical position of the rubber industry offers small hope of early betterment, with world stocks in the first half of 1932 off only 10,000 tons from the estimated total of 640,000 tons at the end of 1931, the only really free rubber is that held in London and Liverpool and stocks at these two centers have fallen by 22,000 tons to 102,990 since beginning of the year and now represent only about six months' supply.

Another factor tending to hold back the British stocks is that banks are understood to give especially easy terms for advances to holders of rubber in warehouses, which makes them prefer to meet their actual commitments in the open market rather than by selling from stocks. The recent rise in price has encouraged many estates to sell the whole of their crops forward for at least a year, thus leaving but a small floating supply of the commodity available for spot deals. The technical position of the London market is therefore strong and any continuance of buying orders should be quickly reflected in the price.

On the other side of the account there are several factors less favorable to a bullish view of rubber. Estates have proved better able to weather the storm than seemed possible when rubber fell to unprecedented lows. The majority of estates have been readier to cut costs than to restrict production. The average cost of production of est te rubber marketed in London today is estimated at 2⅞c a pound.

Consumption has kept fairly steady, about 350,000 tons having been absorbed in the first half of 1932, against 360,000 in the same period in 1931. This has been brought about by an increased consumption of 10,000 tons in other countries, partially offsetting a decline of 20,000 in the United States. The main increases in absorption are those of Russia, 8,000 tons; Australia, 3,000 tons, and Japan, approximately 10,000 tons. In the cases of Russia and Australia, it is believed that this rubber has gone into consumption, but in Japan it is believed to be partly held as stocks.

Britain, Germany, Holland and Italy are practically unchanged from last year, but France shows a sharp drop of 9,000 tons in absorption and Canada and Belgium lesser falls. Although American consumption has dropped to 52¼% of the world's total, it is still the dominating factor in the market and no foreseeable increase of consumption outside American can possibly adjust demand to potential supplies in the near future.

In the long view this situation may alter, as manufacturers are straining every nerve to find new uses for rubber. Especially is this the case with latex. There has been quite an appreciable increase in the import of latex for experimental use by manufacturers in Britain and it is hoped that new commercial uses for this raw material will shortly be developed.

Litchfield Urges the Five-Day Week In a General Statement to Industries

PAUL W. LITCHFIELD, chairman of a special committee of the United States Chamber of Commerce to study working periods in industry and president of Goodyear Tire and Rubber Company, made the following formal statement, coincident to the inauguration by his com-

pany of a five-day week of 40 hours, effective October 1. The purpose is to spread employment. A salary revision accompanies it. No official statement as to the number of jobs thus created was given.

It was declared unofficially, however, that the move eliminates all present need for personnel reduction and will make place for a large number of additional office employes. The new hiring will not, however, approach 10 per cent of the present office personnel total.

Mr. Litchfield's statement follows:

"We have whipped the depression on two fronts. The gold standard of the American dollar appears no longer in danger and, with rising commodity and stock prices, we have been lifted out of the depths of mental despair. Now the big job is to restore purchasing power to the masses.

"The quickest, surest way to do this job is to take the work now available and spread it out so that the greatest number will be employed. If American business will undertake an immediate rationing of employment, millions of men and women, now idle, will be given work and, through work, purchasing power.

"Shorter working periods in business and industry is the answer.

"The advantage of having 100 per cent of the workers working eighty per cent of the time over having eighty per cent of the workers working full time should be apparent to all. It is true that the incomes of the eighty per cent are somewhat reduced but the additional twenty per cent are placed in the market for commodities rather than being left completely out of the economic picture.

"Industrial working periods have been shortened to a large degree during the past three years. But among the white collar workers there has not been such a noticeable trend. As a result, among the white collar class there is a great percentage of unemployment. I have the white collar class as well as the factory worker in mind when I advocate a wider application of the six-hour day and similar plans during periods of restricted business.

"Nothing brings its real value when there is a surplus of it beyond the power to consume it or ability to carry it over a short period until it is needed. This is just as true of man's labor, a man's uninvested capital, as it is of the possessions he already has. Whenever there is a surplus of anything its exchange value goes down. Where there is a shortage, the need for more puts the exchange value up. Higher wages are likely to come only when the labor surplus is reduced.

"Idleness is a social disease. The natural state of mankind is to be working in cooperation with others in producing, transporting and exchanging his products; raising the standards of living and promoting the general welfare. To the man who is idle from choice, society owes nothing. To the man or woman who is able and willing to work, society has a solemn duty to provide means of employment.

"The only cure for unemployment is employment and, as industry and agriculture are the employers, it is up to them to find and apply the remedy.

Goodyear Plant Heads Confer From Branch Factories Throughout the World

ANNUAL inter-plant conference of Goodyear Tire and Rubber Company representatives in various parts of the world was held late in September at the Goodyear Akron plant.

Thirty officials from Goodyear plants in Australia, the Argentine, England, Canada, Los Angeles, Cal., Gadsden, Ala., and from various cotton fabric plants, were present and met with Akron officials to coordinate plans in use in the different branches and to establish policies.

Clifton Susser, vice-president and factory manager of Goodyear, gave the welcoming address at the opening session on September 26. Technical discussions continued throughout the week.

Among the officials who arrived from abroad to attend the conference were: H. A. Flannery, superintendent of the Goodyear plant in England; W. R. Urquhart, superintendent of the Australia plant, and R. E. Lee, assistant superintendent of the Argentine plant.

These officials brought messages of optimism from abroad, and stated citizens of their respective countries "don't feel so downhearted as they do in the United States."

H. A. Flannery, who was accompanied by I. D. Patterson, chief chemist, and D. E. Sheahen, superintendent of the tire division in the English plant, said this plant is working full time. He added, "there is more optimism in England than any place in the world."

Although the Australian plant is working only about half capacity the people are better pleased about the financial condition of the country now that the United Australian party is in power and efforts are being made to balance the budget, W. A. Urquhart pointed out.

"The Argentine is a commodity producing country and is not highly industrialized, so increased prices for cattle and wheat have brought about a better feeling," Mr. Lee said. The plant there is averaging about 80 per cent capacity, he said.

Among other Goodyear officials at the conference were men from the Canadian plants at Bowmanville, Ont.; Hyacinthe, Que., and Toronto.

Goodyear-Zeppelin Corporation May Start Manufacture of Aluminum Alloys

ANNOUNCEMENT on the early establishment of a new industry for Akron at Goodyear-Zeppelin Corporation factory is expected within the next few weeks, according to Dr. Karl Arnstein, Goodyear-Zeppelin vice-president.

For the last six weeks Goodyear-Zeppelin has been conducting a survey into the commercial possibilities of aluminum alloys and stainless steels as substitutes for other metals, wood, glass and earthenware.

Results of the survey, Dr. Arnstein said, have been highly significant.

Goodyear-Zeppelin inquiries have led to suggestions that aluminum alloys be used in the manufacture of furniture, food containers, shipping cases for oil and gasoline, milder acids, etc.; movable structure of many kinds, and wherever else the qualities of strength combined with lightness, or strength combined with resistance to chemical change are desired.

Activity in the new endeavor, which has been carried on quietly, has redoubled following the return of P. W. Litchfield, Goodyear president, who authorized the announcement.

Dr. Arnstein said the varied uses to which aluminum alloys may be put are chiefly the results of their developments for airship purposes.

Dr. Arnstein did not say what, if any, plant changes were necessary to equip Goodyear Zeppelin Corporation factories for general metal manufacture. He did say that it is now one of the best-equipped aluminum working plants in America, and that long experience with aluminum alloys and extensive study of them prepares it as well and perhaps better than any other company in the field.

(Other news of the industry will be found on Pages 21-25)

Solving the Problems of MERCHANDISING

Selling Difficulties of Both the Manufacturer And the Dealer Are Very Much Alike

By F. C. MILLHOFF

Vice-President, Master Tire and Rubber Corporation

F. C. MILLHOFF

***EDITOR'S NOTE:** The question of the relation of manufacturer and dealer, in the merchandising of tires, has been brought to the fore on numerous recent occasions, particularly through the injection of the mail order house problem and cut-throat competitive trade practices into the whole system of retail tire selling. The following article, reprinted with acknowledgement from "Business Administration," of August 25, 1932, discusses in general the sales distribution problem of the tire manufacturer and shows how one company has met present merchandising obstacles successfully, even in the face of the prevailing depression.*

IT WAS apparent long before the business crisis made it imperative, that sales distribution needed the pruning knife. Rapid strides were constantly being made in whipping production into units of economical efficiency —only to take the savings and pour them into distribution in frantic and somewhat misguided efforts to ride the tide of competition. Balance sheets in many industries were most eloquent evidence of this lop-sided practice. A time of reckoning arrived and the only alternative to reforming our expensive distribution habits was to go out of business. Nobody was willing to do that.

In the rubber industry, we of the smaller contingent had followed the lead of larger manufacturers in the matter of branch distribution, which we believed was very necessary to remain competitive in sales and delivery service. While prices were maintained at a fair level, this method of distribution allowed a profit, although the margin often was narrow in some branch districts. But when the orgy of price cutting began—an orgy that has hounded the industry for the past six years—it began to become obvious that branch distribution was an extravagant luxury of dealer service that manufacturers of smaller volume could not afford. The entry of mail-order houses into the tire field on an intensively competitive scale, together with a capacity in the industry more than twice potential consumption, added to competition woes.

Even then, many smaller units hung on to the policy of expensive branch distribution with the tenacity, so traditional in industry, of a habit formed and long practiced. But when general business conditions made it imperative that sales costs must come down and that some efficient method must be devised by which merchandise could be sold and delivered with adequate service at lower cost, the units that have survived are those that broke away from habit and joined forces with production economy instead of stealing its savings.

Early in 1931 we formed the Master Tire and Rubber Corporation of the Falls Rubber Company of Akron, Inc., and the Cooper Corporation and Giant Tire and Rubber Company, both of Findlay, Ohio. This consolidation was, of course, primarily, a movement in the direction of both production and distribution economy. Our first year—not an easy one by any means—gave us a profit.

Our first move in solving the problem of excessive costs in distribution was to close all branches and concentrate our sales force on selling large accounts that could act as warehouse distributors for us. We offered these large accounts discounts that made it attractive to them to organize their own sales forces and supply sub-dealers, yet this arrangement provided a safe margin for us and reduced costs that were prohibitive under the branch plan.

Then, too, we concentrated on larger accounts by giving them exclusive territory in exchange for assured volume large enough to give us satisfactory distribution in that territory. We sold these accounts tires in carload lots and made deliveries direct from our factories. We gave them merchandising cooperation in a variety of dealers helps and shared their advertising costs with an adequate percentage of their purchases. We helped in designing and producing this advertising.

Closing our branches made it necessary, of course, to reduce our sales force. We retained our best salesmen and directed their efforts at closing larger accounts. Since the organization of the Master Corporation, we have reduced our distribution costs fifty per cent and have increased our volume of business; large accounts making their purchases in car-lots and selling their stocks in exclusive territory. Some of these distributors have a number of sub-dealers while others work the territory from a central location.

One of the most expensive factors in branch distribution was a large number of small accounts whose business in the aggregate was most desirable but who as individuals cost us more in sales effort and service costs than their business was worth. We did not want to lose these accounts. Most of them were good credit risks and their total volume was very worth-while. We were confronted with the problem of taking care of them economically where our large distributors did not supply them from their warehouses.

We solved this problem by direct factory shipments and mail solicitation. They knew our products and had built up their business selling them. They wanted to remain

our customers, but, at first, they shied at factory shipments as delayed service. However, they soon discovered to their astonishment, and we to ours, that prompt attention to orders—shipping the day received—left but a negligible difference in service between branch and factory delivery. They learned to order in larger quantities and to anticipate their needs instead of waiting for the salesmen to call on them. This method of serving these smaller dealers has worked out very satisfactorily and we have a large number of them on our books.

Finding this direct mail method a good one for smaller accounts, we enlarged it with mail campaigns supported by trade journal publicity and added an appreciable number to our clientele. We have customers whom we have never seen and they are increasing their volume right along. Many of them are cash customers, a most desirable contingent during these disturbing times.

My experience in directing sales in the rubber business covers a period of more than twenty years, sixteen of which I spent in charge of sales of one of the largest companies—now a division of one of the three largest. Never during all of those years have I seen a time when sales executives have done as much actual selling themselves and across their own glass-top desks. This seems to be true of almost all industries. Presidents, vice-presidents, sales managers and lesser executives who formerly relied on conferencs, the telephone, letters and telegrams, now pack their bags and sleep nights on and in Pullman cars, covering their territories just as they did in the days of their earlier training.

During the past year I have sold more tires across my desk and on the road than in many, many years, and I find that I like it. I'm not so keen on too many nights in succession in Pullman cars and, of course, use the automobile where jumps are not too far apart. But on the whole, it gives me a chance to freshen friendships among dealers whom I had the pleasure of starting in business many years ago, and the double pleasure of finding them prosperous.

Importance of Personal Contacts

Personal contact with the dealer, in his own office or on the road, is, I think, something that every sales executive should practice—far more than most of them do. Such contacts furnish an intimate and detailed picture of actual conditions in specific territories—and conditions are by no means identical in any two territories, no matter how close together nor how similar in general business conditions—and provide a better understanding of mutual sales problems.

In this day of intensive competition, especially in the rubber industry, selling has a totally new significance. Strange as it may seem, with all the intricacies of modern merchandising, selling is tracking back to the old man to man, manufacturer to retailer relations. We get together with our large dealers. We get the details of their peculiar problems and help them lick them. We devise ways and means to meet individual conditions, as related to a given locality. If it's a price war, we provide merchandise and selling plans to meet that particular need. We do not encourage price slashing and we do not enter into price wars with the idea of helping such unwelcome conditions to become established, but we do protect our dealer so that we may survive to carry on when sanity has been restored to that market.

Selling in a producer's market and selling in a buyer's market are two very distinctly different propositions. Quality rules, with price secondary, when production lags or keeps pace with demand; but price holds the whip hand when present conditions prevail, and no industry is more infected with this epidemic than the rubber industry, with its complexity of competitive cross-currents. Today we are confronted with a condition of "tide-over" buying, more or less. Competitors who have never produced secondary liens with price appeal are making price goods.

Dispensing with branch distribution proved an effective aid to smaller dealers served direct from the factory. It naturally follows that the consolidation of the three companies and pruning sales costs also reduced our overhead costs. We have been able to hand these savings back to smaller dealers in prices that compare most favorably with dealers who buy in larger volume, and we have been able to give them greater advertising assistance than was possible under our former policy.

As this is written, our factories are running with three eight-hour shifts, seven days in the week, and we are behind in filling our orders. Seasonal activities and the federal tax are, of course, largely responsible for this busy condition—most unique since war days—but we know that our better relations with our dealers, large and small are responsible for much of our capacity production. Last May we established an all-time record for sales and production, and June will eclipse that by a large margin.

We have had many lessons from the present distressed conditions in business—on the mend now, I sincerely hope and believe—but none has been greater than the very evident fact that we made a complex and extravagant process of a very simple thing—that very simple process of manufacturing a needed article and delivering it to the consumer at an equitable price.

The manufacturer and the retailer are brothers under the skin. They may bicker and drive hard bargains, argue and quarrel, but in the end their relations must be "United we stand, divided we fall." We are busy today because we have applied that theory to practice.

Indicating Caliper

A NEW indicating caliper, manufactured by Farrel-Birmingham Company, Ansonia, Conn., is designed primarily for large rolls and calenders used in rubber plants and other factories using wide length rolls and offers a wide range of readings over the entire roll face.

Unique features of this device are that it can be quickly

adjusted for a wide range of roll diameters; a dial gage indicates the measurement directly, conveniently; there is no chattering in moving the caliper from one point on the roll to another.

It is claimed for this caliper that roll diameters all along the roll's length can be read so much more quickly and easily than by steel tape or micrometer, that it becomes feasible to calculate exact diameters required at frequent points on the roll, and to insure desired crown by checking the calculated diameters with the indicating caliper.

RUBBER ROADWAYS

A Review of the History and Developments in Rubber Paving and a Resumé of the Research Work Now Being Undertaken in Connection With the Possible Combination of Latex and Other Road Base Materials

By J. D. HASTINGS

AS far back as 1870, at St. Pancras Station, London, a road leading to the arrival platforms was paved with rubber slabs. These were two inches thick and while some have been taken up, replaced or relaid, there are in use at the moment some of the original slabs still in good condition, a striking testimony to the life of rubber as a road making material. Little more seems to have been done until 1913, when the Southwark Council was approached for permission to lay a small experimental stretch of rubber paved road. This was allowed and a section of two or three square yards of rubber-capped wooden blocks was laid at the junction of the New and Old Kent roads. After a year and nine months, the blocks were taken up for examination; little surface wear had taken place but the anchorage of the cap to the block was unsatisfactory and there was wear between the under side of the cap and the top of the wood. In 1915, Rubber Roadways Ltd., a company to foster the use of rubber for roadways, was formed under the auspices of the Rubber Growers' Association for collaboration with manufacturers and inventors to try out many of the ideas and patents that the earlier test had brought forth. Many of these were unsatisfactory, due to the difficulty of anchorage of the cap. In 1918, the Leyland and Birmingham Rubber Company Ltd., evolved the Leyland block and in the early part of 1920 a section of road in Southwark was laid with these blocks. These had a rubber cap attached to vulcanite which was fixed to a steel plate with projections on the under side, these being embedded in the wet concrete foundation of the road at the time of laying. Within a short time, some 15 per cent of the blocks had shifted from the plates, and accordingly, half the area was taken up and replaced with blocks having a plate of expanded metal with projecting lugs embedded in the vulcanite: these were an improvement.

The anchorage of the cap continued to be the chief difficulty, the actual wear on the surface being negligible, and the position with regard to the use of rubber as a road surfacing material is expressed in the statement of the chairman of Rubber Roadways Ltd., who said in 1922 "there is no question of the wearing and other properties claimed—the problem is now one of attachment to foundation."

Further investigation by the Leyland and Birmingham Rubber Company Ltd., led to an alteration in the design of their block, and in 1923, the improved type was laid in another section of road in Southwark. The block now consisted of an upper portion, half an inch thick, or rubber similar to the old cap and a lower 2½ inches of very hard rubber, the two being vulcanized together. These proved very satisfactory and when removed in 1926 showed little wear. That a great deal of investigation was being carried out is evident in the statement made in 1925 by Rubber Roadways Ltd., that over 70 patents for the use of rubber as road material, mainly in the form of blocks, had been granted within the previous few years.

Today the anchorage question has been completely overcome, and there can be seen in England and Scotland, as well as on the Continent, a number of sections of roadways paved with one or more of the following five principal blocks:

(1) The Leyland block previously mentioned, laid in 1924 on a stretch of roadway at Fresh Wharf, London Bridge.

(2) The North British block laid in Edinburgh and Glasgow in 1923. A feature of this block is the size of the concrete base which is smaller than the rubber cap and thus ensures improved grouting when the blocks are laid.

(3) The Cowper block in Thurloe Place; an interesting, all rubber three-layer block, grooved and recessed on the sides, giving a very good surface joint, laid in 1928 after earlier trials had proved very successful.

(4) The Gaisman block, a rubber cap vulcanized to a hard, highly vitrified brick base, laid in 1926 in New Bridge Street, London.

(5) The Cresson block, a rubber cap fixed to a base containing stone, sand and other ingredients mixed with latex, all of which are pressed together and vulcanized when dry. Laid in Croyden at the end of 1928 following its successful use in Singapore since 1922, where blocks removed in 1927, apart from a slight surface cracking due to the tropical sun, were in excellent condition with practically no wear—incidentally the road adjoining had been repaired three times within that period.

All these trials now taking place are in areas where traffic is heavy. In addition to showing no sign of wear, the reduction in noise and vibration is particularly noticeable. In 1922 a series of sound records were taken near Cenotaph, London, after rubber paving had been laid. The paving, although unsuccessful as far as the maintenance of the road was concerned, provided valuable data

Rubber Roadway Recently Laid at Bristol, England

*Reprinted with acknowledgment from the *Journal of the Rubber Research Institute of Malaya*, July, 1932.

on the use of rubber as a vibration absorbing medium. The actual measurements showed a 30 per cent reduction in noise as compared with that transmitted by the adjoining wood paving and the remaining sound was less objectionable.

Late in 1927, more accurate measurements on vibratory conditions in buildings adjoining the rubber road in New Bridge Street were made on behalf of Rubber Roadways Ltd., and proved conclusively that vibration was much decreased with less damage to foundations of the buildings in consequence.

The present situation with regard to rubber blocks is that while every test indicates that wear is reduced to a very small amount and vibration is largely absorbed, the initial cost of laying the road is too high for large scale work. Considerable reduction in cost has been effected; when trials were first started the cost per square yard was approximately £5; at the annual meeting of Rubber Roadways Ltd., 1930, the secretary was able to state that firms were prepared to produce at £2.10.0 per square yard. This compares favorably with granite setts at £2.0.0. Moreover, in 1929 two areas were laid, on which the manufacturers gave a free maintenance guarantee for five years.

As alternative to the use of rubber-capped blocks there are the possibilities of slabs of rubber laid on similar lines to the early experiment at St. Pancras Station. Quite recently a trial has been started in Paris in the Quai de la Râpée using long slabs of rubber, laid on a cement foundation with hot melted asphalt between the rubber and the concrete as the binding material. The slabs were 8 to 9 meters long and 0.80 meter wide, made in two layers, the top being much thinner than the bottom which is in direct contact with the foundation. So far, no reports are available; there is a section of Gaisman block quite near, laid in 1929, so that a comparison will be of great interest. About one year ago, in the Ipoh district, trials with rubber carpeting embodying very similar ideas were made by two local inventors. Reference to a trial of this product by the Institute is made later.

The possibilities of using rubber incorporated with ordinary road materials have received attention from a number of investigators, and many patents have been taken out for preparations. As long ago as 1904, rubber had been incorporated with asphalt and laid at the Place de la Gare, Cannes, where traffic was said to be especially heavy. This is still in existence, while large stretches of rubberized asphalt are to be seen at Monaco and Cannes laid in 1912 and still in good condition. Little information is available relating to costs, and it seems difficult to see how the quantity of rubber introduced—which is from 2 to 5 per cent—could effect the improvements in quality of the road surface to the large extent claimed.

In 1922, a trial was made in England and Ceylon by boiling down low grade rubbers in open pans yielding a tarry residue which was applied to the road. The result was not satisfactory, and at the same time the process lost the distillation products of the rubber which were not collected.

Much work has been done on the destructive distillation of raw rubber, and the oil obtained has many possible applications. Rubber oil, in common with bituminous oils, has a solvent action on rubber itself, and its utility as a solvent for rubber and asphalt or bitumen has been investigated.

Investigations of the Research Institute

As a result of discussions late in 1930 between the Chief Secretary to Government, Federated Malay States, the president of the board and the director of the Rubber Research Institute, it was agreed that investigations on the possible application of latex products to roadways were desirable and that such investigations could be best carried out in this country where supplies of latex are available.

It was also agreed that it was essential in the first instance to carry out chemical investigations in the laboratory and that the cooperation of roadway engineers was only possible at a later date.

Work was commenced in March, 1931, in the chemical division of the Institute, Dr. E. Rhodes being the executive officer, and has been continued since May, 1931, by J. D. Hastings, who was appointed as special chemist to continue the work under the supervision of Dr. Rhodes. Dr. Rhodes proceeded on leave in May till the end of the year and made a number of valuable inquiries and contacts in relation to the problem while on leave.

The work done and the problems encountered are best dealt with under the following headings:

Compositions Made from Latex.
The Laboratory Testing of the Compositions.
Rubber Roadway Compositions of Public Interest.

A rubber road material made from latex laid on the road as a paste necessitates the incorporation of other bodies as fillers. Rubber blocks, like motor tires, are not made of pure rubber. Non-rubber constituents are added to give hardness, resistance to abrasion, long life to, and mask some of the characteristics of pure rubber that would be undesirable; moreover the larger proportion of these constituents must be cheap.

Rubber Compositions Made From Latex

The choice of a filler when using latex as the rubber base will depend on the state of division in which the filler is obtainable, or to which it can easily be reduced. The state of division or particle size affects the ultimate strength of the filled rubber very considerably; in general the finer the filler the stronger the resulting product. Carbon black, which is used extensively in the motor tire industry, is obtainable in an extremely fine form and to this largely owes its value. The use of mineral bodies as fillers for latex as a road material are therefore limited to those which can be obtained in a very fine form, such as the clays.

A great deal of time has been spent on the problem of incorporating mineral bodies and compounding latex with various types of filler. We have made a large number of mixtures in the laboratory embracing the use of all the possible materials available. Each class of filler has been found to have its peculiarities and effect on the ultimate product, to confer in some cases desirable, and in other cases undesirable, properties. For example, the incorporation of carbon black while being of great value is only achieved with difficulty, and its use in large quantities renders control of the mix uncertain and difficult.

Many of the mixes prepared in the laboratory have shown possibilities; at the same time it was thought that they would not behave in the same way when used in practice. In order to obtain information on this point a small section of road foundation was laid at the Institute, similar to that used in ordinary road construction.

In using latex as the source of rubber, there is the difficulty of working with a relatively unstable liquid as compared with the stable and solid condition of ordinary rubber. Before the incorporation of any kind of filler can be attempted the latex must be stabilized. Many classes of substances useful for this purpose are known, in general protective colloids such as the soaps, casein, gums and others. These have been used during the work, which has shown that the uniform incorporation of fillers is not easy; moreover as the mix becomes more paste-like the difficulties increase. Liability to coagulation becomes greater which means that larger quantities of stabilizer are necessary; this is a disadvantage in the final product when applied to the road owing to retarded coagulation and increase in "setting" time.

Our experiments have shown that a material made from latex and applied to the road as a paste must have the contained rubber in an uncoagulated condition. This is essential for natural anchorage. Once coagulation has taken place these materials have lost their paste characteristics and cannot be laid on the road with the expectation of a firm anchorage; neither can one piece of material be joined to another by pressure alone.

The work on the anchorage problem indicates that if applied as a paste, when "setting up" (coagulation of the contained latex) does occur, a firm hold is obtained on the surface of the road, and from this point of view a foundation that is not graded up to the fine surface known as "blinded" is preferable. It was at first thought that consolidation subsequent to laying, which causes a thinning out of the material might destroy the anchorage established by the "setting up." This does not appear to be so.

Our work with field latex very soon showed that the principal problem was the removal of the water content from the mix. The

water can only be lost in two ways, viz., by drainage or surface evaporation. The latter is very much faster and it does not appear possible, assuming a mix to give an excellent material when freed from water, to get it on the road in such a state with any degree of thickness. The drying out subsequent to laying causes cracking. Thinner surface films are possible.

Attempts to limit the initial water content have been tried, such as concentration of the thinner mixes by creaming, the use of concentrated latex, and the preparation of extremely thick pastes by the use of large quantities of filler. Concentration of thin mixes by creaming was unsuccessful. The cream was unstable and separation of fillers took place. It has not yet been possible to investigate the question of concentrating compounded latex by evaporation, plant of a special type is needed similar to that used in the manufacture of Revertex. The experiments tried have so far indicated the inadequacy of ordinary laboratory methods.

Use of Concentrated Latex

The use of concentrated latex has been investigated. Results show there is more possibility of avoiding the cracking experienced with field latex, the use of which has been practically abandoned on this account. The form of concentrate mostly used at the present time is that obtained by creaming methods. Research on creaming is being undertaken in the Chemical Division of the Institute and a supply of concentrates of different types is readily available.

The difficulties of compounding concentrated latex are greater than with field latex; the uniform introduction of large quantities of filler is more difficult. Unless a large amount of stabilizer is used very thick pastes cannot be compounded; the presence of excessive amounts of stabilizers is however undesirable as such bodies tend to delay coagulation when the mix is laid and retard hardening. The disadvantages of heavily compounding concentrated latex are recognized in those manufacturing processes using very thick compounded mixes and it is more general to concentrate compounded latex.

It has already been mentioned that the uniform introduction of filler into a thick paste is not easy; the thicker the paste the more difficult does it becomes to achieve uniformity. From the experience gained in the laboratory, working on a small scale by hand under very definitely controlled conditions, it was thought that mechanical mixing, or mixing that could be applied to roadside practice would present considerable difficulty. By the courtesy of a local company it was possible to use an internal mechanical mixer of a well known type. The results were not satisfactory, difficulty was experienced in getting a uniform paste of the same even consistency as that obtained by hand in the laboratory.

Our earlier work on the use of fibrous bodies and cements as fillers has led us to continue on these lines; while an enormous amount of work remains to be done, it appears that the use of certain types of these fillers may be of great value. Mixtures have been made which are less liable to crack on drying, while the use of cement to remove the water by chemical means has shown promise.

A paste mill has been installed at the Institute and has been of great help in connection with work on fibers. So far it has not been possible to use it successfully with the work on cement, because of the difficulty of controlling coagulation.

The early difficulties of uniformly incorporating, to any desired degree, chemically dehydrating fillers such as cement and plaster of paris, have been overcome. The time spent on this problem has been justified and from the small scale laboratory experiments it has been possible to make mixes on a large scale with the same measure of success; at the same time the methods employed are applicable to the incorporation of other types of filler.

A good deal of work has been done on the incorporation of bitumen and asphalt into latex with a view to preparing a paste material. It is not possible to introduce bitumen direct. Its incorporation as an aqueous emulsion is simple, but the implied fact of any added water is a disadvantage. The problems connected with the compounding of a latex bitumen mix are similar to those already described for ordinary latex pastes. Investigations on the use of bitumen emulsion in combination with latex as a surface dressing have been carried out at the Institute but there is no proof yet that such preparations are an improvement on the ordinary bitumen emulsions now in use, from an ageing and wear point of view. Further, such a combination applied as a thin dressing will be of no value in relation to absorption of vibration.

Preliminary work on the use of vulcanized latex has been studied. Attempts have been made to follow the changes due to the use of certain ultra accelerators with variation in time of standing for different quantities of accelerator; using an uncompounded latex with a view to ascertaining whether its behavior when used in a compounded mix is comparable to that when used in latex alone.

Work on the compounding of latex and incorporation of the various fillers has led to the need for a testing technique. This is

New Roadway Surfacing in Singapore. Rubber Mixture is Levelled Over a Rock Base. Work is Done by Hand

an entirely new field of work, for at present there is no technique, and nothing is known about testing latex base materials for rubber roadways.

In common with all articles containing rubber the life and wearing properties of a rubber roadway mix will almost certainly depend on the state of vulcanization of the contained rubber. It is necessary to be able to follow any changes in the rubber that occur with time, more especially in the early stages of its life. The ordinary testing methods, such as permanent set or stress-strain relationships cannot be applied to latex mixes of the type suitable for road application. The determination of free and combined sulphur content and hence vulcanization coefficient by the usual methods of sulphur determination commonly applied to rubber have been found unsatisfactory when applied to road mixes and inadequate as a measure of the degree of vulcanization.

Investigations on the rate of change of swelling in organic solvents with time have been carried out, although it has not been possible to correlate the amount of swelling with degree of vulcanization, small changes in this are detected. In conjunction with swelling tests, stress-strain relationships have been studied where possible and qualitative conclusions regarding the state of vulcanization have been deduced in agreement with tensile measurements. With a road mix containing bitumen or other constituents soluble in organic solvents this test is not applicable and so far there does not appear to be a line of approach for such materials. Variation in degree of vulcanization at different depths added to large differences due to small changes in size and shape of the pieces under test make the evolution of a standard test difficult and unlikely.

With regard to abrasion testing several types of instrument have been tried, all of which have not proved completely satisfactory. A machine capable of dealing with very small samples giving a complete surface abrasion in a manner akin to the type of abrasion to which the material will be subjected is necessary. At present there is no machine suitable for these needs available here. Our experience has however indicated on what line work should be continued.

The artificial ageing of compounds can now be investigated. A Bierer Davis Oxygen bomb has been installed and its use on road-

way mixes by chemical examination may enable us to predict how materials will age under normal conditions.

Development in testing technique are more likely to be directed towards the evaluation of physical rather than purely chemical tests. Should a material be satisfactory under such tests as abrasion, swelling, tensile strength, permanent set, hardness or plasticity followed by chemical examination before and after ageing we are certainly better fitted to predict its behavior under actual road conditions than to apply only the test of service which at present is apparently the only criterion.

In a wet mix the evaluation of a test for shrinkage and its rate at different temperatures also becomes of great importance.

New Rubber Roadway Compositions

The laying of experimental areas in Singapore of a proprietary roadway composition have been watched. Visits have been made, the actual laying of the paste observed and its subsequent behavior on drying. The paste used was of the same general type as those with which we had been experimenting for some time. The problem of incorporation of suitable fillers does not admit of much variation. The drying of the paste was only obtained at the expense of contraction and resultant cracking. For any material to be successful the possibility of water penetration must not exist.

A bitumen emulsion from England has been investigated in connection with its use with latex. Laboratory tests have shown it to be very similar in behavior to Colas, an aqueous bitumen emulsion made by the Asiatic Petroleum Company. On standing, separation of the bitumen from the latex rapidly takes place. Test strips were laid at Petaling with a bitumen and latex mixture in the proportions recommended. These were unsatisfactory and a further trial, using different methods of application, was laid. It is yet too early to pronounce definitely but indications of wear show that the mixing of latex with bitumen already emulsified yields too thin a product, at the same time an elastic surface skin is formed which is more easily peeled off, the plastic nature of the bitumen being masked. Trials have recently been made by the Asiatic Petroleum Company with preparations of latex and bitumen. The preparations used by them differ from simple mechanical mixtures of latex and bitumen emulsion in that the bitumen is emulsified not in water but in latex itself; the product therefore contains less water than is present in a mechanical mixture of two aqueous media.

The preparations have been patented by the above company and contain approximately 10 per cent of rubber. Trials have been made at Colombo and also in Java, but the results are still inconclusive.

Following a favorable report on the "Silent Roadway" experiment carried out at Lahat by Messrs. Kendall and Graham in which thick rubber matting in strips was used, a similar trial under the supervision of the Rubber Research Institute has been laid with the co-operation of the Public Works Department at Petaling New Bridge, about 6 miles from Kuala Lumpur. It appears that the problems of anchorage and the prevention of water entering the foundations are likely to prove of far greater importance than wear and life of the rubber composition itself. A traffic census taken soon after laying gave the average weight passing over the area during the day as just under a thousand tons. This experiment is too recent to enable any definite conclusion to be recorded.

In addition to the trials recorded above, several samples of material for road making have been sent to the Institute for examination and report. The tests which have been carried out here have shown them to be unsuitable.

It will be seen from the foregoing that of the various methods which have been envisaged for the application of rubber to road making, only in the case of block paving has a satisfactory material so far been evolved. The difficulties of laying have been overcome and the chief obstacle to the wider application of the rubber paving block seems to be a reluctance to face the capital expenditure involved.

Attention has recently been focussed upon the possibilities of wet mixes prepared from latex, the underlying idea being that it should be cheaper to lay a material which can be poured or spread. This line of work has been actively investigated at the Institute and experiments are still proceeding. Sufficient experience has been gained to indicate that such a method though simple in conception is extremely difficult to perfect in practice. The difficulties encountered are numerous and it may be stated that, of a very large number of different preparations which have been made at the Institute, no single one can yet be judged as satisfactory from all points of view, although some have definite promise.

The experiments which have been made by outside authorities with proprietary materials of this type have all had some disappointing features. There can be no doubt that the really satisfactory wet preparation has yet to be evolved.

The prospects of success seem at present to be uncertain and if ever it is achieved it will be only as a result of the most patient enquiry.

Low Pressure Tractor Tire

A NEW low pressure tractor tire has been developed by Firestone Tire and Rubber Company and is now being introduced by tractor manufacturers and dealers as a revolutionery advancement in power equipment for farms.

This tire is large in cross section and diameter, and carries only twelve pounds air pressure. The new tractor tire has been developed with due consideration of over-all diameter, clearance, ground contact, width of plow furrows, and all other necessary factors. It is so designed that it makes the tractor stable and free from wobble or sidesway, permitting the use of customary agricultural attachments.

This development has had the cooperation of implement

Small Farm Tractor Equipped With the New Low Pressure Tractor Tire

manufacturers, and has been tested by them and by farmers in many parts of the country. Important development work and tests were performed at the 600-acre farm of Harvey S. Firestone at Columbiana, Ohio, where Mr. Firestone carries on practical farming with the most modern equipment.

The new tire enables the ordinary farm tractor to do much more work and adds varied uses, according to advices of its manufacturers. It makes the tractor available for hauling vehicles and equipment on paved highways. In barnyards, orchards, meadows, groves, and on golf courses it does not injure the surface, and does not pack the seed bed. It can be driven into farm buildings without injuring the floor.

The tire does not pick up or throw dirt. It can be inflated with the ordinary hand tire pump.

Firestone engineers have pioneered a drop-center rim for use with these tires, both front and rear, which is the first adaptation of the drop-center principle, almost universal in the passenger car field, to use in the large tire field. Detachable weights are supplied for use in heavy plowing or where maximum traction is a factor, fastening to the spokes and resting on the hub.

New York RUBBER GROUP, *A.C.S., Holds Interesting Meeting and Dinner*

Hears Talks on Freak Patents, Super-Balloon Tires and a Trip Around the World on a Rubber Cargo Boat — About 100 Attend

AN interesting meeting of the New York Group, of the Rubber Division, A. C. S., was held Wednesday evening, October 5, at the club rooms of the Building Trades Employers' Association, 2 Park Avenue, New York City. Almost 100 members and guests attended the meeting and the very excellent dinner which preceded the presentation of papers.

The program included an illustrated talk on "Freak Patents," presented by Peter P. Pinto, secretary of the Group, and based on extraordinary patents actually granted to inventors by the United States Patent Office; an interesting travelogue covering "A Trip to the Far East on a Rubber Cargo Boat," by E. T. Croasdale, who recently completed such a voyage on a British freighter, within the last year; and a semi-technical paper on "What's This About the Super-Balloon Tire," presented by B. J. Lemon, of the United States Rubber Company. Brief abstracts of these talks are given below.

At a meeting of the executive committee of the Group, held prior to the dinner, it was decided to hold the next meeting, which is usually termed the Group's "Christmas Party," on the night of Wednesday, December 14. A program and entertainment committee for the occasion was formed, consisting of R. E. Casey, chairman, P. R. McCampbell and John M. Ball.

As the election of officers for the next year will also take place at the December 14 meeting, a nominating committee for the naming of such officers was also appointed, including D. F. Cranor, Dr. H. L. Fisher and Carl J. Wright.

ABSTRACTS

What's This About Super-Balloons?

B. J. LEMON, *United States Rubber Co.*

THE automobile engineering profession is still loath to fully accept the super-balloon. The design and principle is not new and dates back to the early experiments with the balloon tire of 1923. Aeronautics have virtually revived and pushed the adoption of the new super-balloon. The application in industry of new developments invariably meets opposition and the super-balloon is no exception, but the tire history of 1923, with the final adoption of the balloon tire may be repeated in 1933 with the acceptance of the super-balloon.

The introduction of the super-balloon naturally confronts the tire and car engineers, and to even a more magnified degree, again brings the perennial problems of carcass design, tread wear and noise, shimmying, revised springing, snubbing and steering.

In its new application to the automobile it has a novelty value which becomes a new sales asset of distinct importance in these times of depression. Efforts have not produced, so far, a super-balloon that exceeds the tread life of the corresponding standard balloon. Steering is inherently harder with the larger section of road tread surface, plus lighter pressure. Experience has demonstrated that blow-outs may be more serious with the super-balloon. On the other hand the super-balloon seems to offer less tendency to skidding, due to its covering more road surface inequalities with less bounce. Also as regards straightforward traction, the super-balloon excels the balloon tire because of its greater contact area.

If super-balloons are judged solely on the basis of the advantages and disadvantages that result from their use on 1932 and previously made cars, they stand condemned today by an almost unanimous vote of the automobile engineering and service fraternities. The advantages generally acknowledged are less rattles and squeaks in the car, eye appeal, improved braking, especially on rough roads, and questionable ride appeal. Their disadvantages include greater costs, an immensely complicated and more expensive car and certain driving problems.

Reaction seems to have set in to what might be termed the "high pressuring of low-pressure tires." The pendulum is on the back swing. Tire size must keep pace with the car design of the times and on a common sense economy basis. But the super-balloon has quickened the spirit of finding out what is bad about cars and correcting the bad spots. Coming as it did in a depression, its lesson should produce a closer articulation of the principles of economy and research.

A Trip to the Far East on a Rubber Cargo Boat

E. T. CROASDALE

THE talk was an entertaining travelogue of a trip around the world, from New York, on a British freighter, equipped with latex storage tanks and largely engaged in the shipping of other crude rubber in bales, cases, etc. A graphic and detailed description of the trip and the side journeys at ports of call, gave an interesting picture of the beauties of the Far East and incidentally the side lights on some of the phases of international politics.

The method of cleaning and preparing the latex storage tanks, the lining of them with paraffin and the storage and piping facilities at Belawan, D. E. I., were described, as well as the handling of cases of rubber, stowing and lighterage to the ship's side. The economic conditions in Malaya and the Dutch East Indies, due to the general depression and the low prices for rubber, were also depicted, and the opinion was expressed that many of the estates now forced out of tapping will revert to jungle and will be a permanent economic loss.

Freak Patents

PETER P. PINTO

IN the realm of invention the number of odd or "freak" patents which have been actually passed upon favorably by the United States Patent Office, many interesting devices, some using more or less rubber in some form, have been devised. A number of these have been collected over a period of years by Carl J. Wright.

Among those shown and described included a tape worm trap, noiseless alarm clocks, anti-snoring device, firearms which shoot around corners and various surgical and therapeutic devices.

EDITORIAL COMMENT

The Five-Day Week Plan

SOME of the findings resulting from a nation-wide survey of the situation in business and industry with respect to the adoption of a shorter work period, such as the five-day week, have been made public by the National Industrial Conference Board upon the announcement of the completion of the study. The report points out impartially the advantages of a shorter work period in industry, as well as the complications and difficulties that confront the proponents of the idea.

It was found that a large majority of industrial concerns in the United States have already adopted some form of spreading work, by operating their plants on a part-time basis, by rotating shifts and staggering work periods, or by a combination of both methods. There is general agreement that the work period should be shortened, at least during the prolonged period of depression through which the country is now passing.

This sentiment has resulted in a serious effort to bring about general adoption of some plan for the better distribution of work. Those engaged in this movement are reminded by the Conference Board report that there is a sharp line of division among them. On one side is a group of welfare and civic organizations, public-spirited citizens, and politicians who want a five-day week adopted without any reduction in the earning power of the workers, or, in other words, a five-day week with an increased hourly wage rate to compensate for the shorter period. On the other side is a large group of business men and manufacturers who are opposed to any plan that will increase costs and raise prices. This issue will inevitably become vital.

Under present emergency conditions shorter work schedules have been put into effect at unchanged hourly rates of pay without general protest, either because curtailment was recognized as unavoidable for the time being or because it was understood that the shorter work schedule would make possible the employment of some who were without jobs or income. Ready compliance with such a policy under normal business conditions is, however, questionable, because a change, for example, from an 8-hour day to a 6-hour day would mean a 25% reduction in weekly wages.

The report points out that consideration must be given to the difference between wage rates per unit of time and wage rates per unit of product. The piece-worker has it in his power to increase his weekly earnings by the application of greater effort and increased skill, whereas the earnings of the hourly-rate worker are absolutely determined by the number of hours in his weekly work schedule. Thus it might be possible for the piece-worker to make up for some of the lost time even without a change of rate, but this would be beyond the power of the hourly-rate worker.

A significant part of the report points out the dangers of making too great a cut in wage scales.

"Probably a considerable factor in the general activity of industry between 1925 and 1929," says the Conference Board, "was the enlarged domestic demand for luxuries as well as necessities made possible by the relatively high earnings of the great mass of wage-earners. It has been estimated that about one-half of the annual expenditures of all people in the United States comes from salaried employees and wage-earners whose average annual earnings are $2,000 or less. To the extent, therefore, that this purchasing power would be diminished because of a reduction in earning power, demand for manufactured products would decrease, and a desirable market that has come to be relied upon, for which production facilities have been expanded, would be lost."

Improvement in Conditions

LARGELY due to seasonal influences but also to the forces of rehabilitation which have been set up, general conditions during September showed improvement in important classes of industry and trade. In the aggregate the improvement of August was sustained and increased and the general tone of business and industry was considerably better. According to the Conference of Statisticians in Industry, general sentiment continues to favor at least the arresting of the downward movement in coming months. The textile industry further consolidated its gains by increased activity again in August. Additional encouragement was provided during the month by the extension of advances in wholesale prices from agricultural to non-agricultural commodities.

Courage in industry and optimism in thought must go hand-in-hand at this time and "mass phychology" will do the rest toward the steady improvement in conditions.

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THE RUBBER AGE is indexed in *Industrial Arts Index*

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

PAYROLLS DROP 46.7 PER CENT IN 2 YEARS

The payroll of the rubber industry in the state of Ohio was cut 46.7 per cent from $114,908,114 in 1929 to $61,262,607 in 1931, according to a compilation announced recently by John B. Gilbert, chief of the Ohio Division of Labor Statistics.

Summit County absorbed 89.2 per cent of the cut. Mr. Gilbert did not announce personnel figures for the rubber industry.

Business payrolls the state over declined 35.1 per cent during the same period.

The average number of employes in all industries declined 24.2 per cent, or 315,553 from a 1929 total of 1,306,624 to 991,071 in 1931. The decline was heaviest in the manufacturing division, where personnel reductions reached 32.8 per cent. In nonmanufacturing industries personnel reductions amounted to but 9.3 per cent for the two years.

Connecticut Plants Active

A definite uptrend in the volume of rubber manufacture in Connecticut is indicated by increased activity at the plant of the Hoggson and Pettis Manufacturing Company, 141 Brewery street, New Haven, Conn., which produces rubber workers' tools, cutting dies, molds and engraved calendar rolls.

C. A. Stephan, secretary of the company, told THE RUBBER AGE that the plant's volume had shown an increase of between 30 and 40 per cent within the past six weeks. He attributed the gain to increased activity in the smaller rubber plants, perhaps due to orders from mail order houses.

The plant is now operating five full days a week, in contrast with the one and two-day schedule previously in force, Mr. Stephan said. The roll-engraving department has been on a full-time basis, with some overtime, for two months, he added.

A substantial increase in volume, with a decidedly healthier tone in general business, was noted by the Seamless Rubber Company, New Haven, Conn., during the month of September, according to F. T. Lane, vice-president.

The company's inventories have been reduced to an absolute minimum and the nature and frequency of rush instructions on orders received indicate that dealer's stocks are also down, Mr. Lane added. The gain in volume, while not large, has been great enough to provide definite encouragement, he said.

A somewhat surprising development is that the Seamless company's business on football bladders has been practically normal. Late sales on the more expensive bladders, which are used only in college games and not in practice or sandlot play, have also held up, indicating that the larger colleges anticipate normal attendance at their major games.

A definite uptrend in business during the past four or five weeks is reported by the Whitney-Blake Company, New Haven, Conn., manufacturers of rubber insulated wires, cables and cords. Considering the increased September volume, company officials are inclined to regard prospects for the remainder of the year as encouraging.

Plant Operations

According to recent press dispatches the Akron plants of the Firestone Tire and Rubber Company are producing 22,000 tire units per day, operating four and a half days a week on a two eight-hour shift schedule per day.

The Goodyear Tire and Rubber Company is reported to be on a 40,000 tire unit schedule per day. The Akron plants are working four days a week, with four six-hour shifts.

FALLS DENIES RUMOR OF MOVING PLANT

Branding rumors that the Falls Rubber Company management in Cuyahoga Falls, O., was contemplating moving that plant to Findlay, O., where another plant owned by the Master Tire and Rubber Corporation is located, as entirely false, W. P. Cline, vice-president and treasurer of the Master Company, declared that expansion of the Cuyahoga plant was being considered.

"It is ridiculous to think that the Falls plant would be moved or interfered with," he said. "We have recently installed new machinery and added equipment and because of orders on hand are actually in need of greater facilities there. We expect to provide them."

He said also, that the Findlay plant would not accommodate the added business that would be thrust on it if the Falls output was transferred to that place.

State Buys Rubber Factory

The state of Ohio has recently announced the purchase, at a sheriff's sale, of the plant of the defunct Rainbow Tire and Rubber Company, Delaware, O., at a price of $10,000. It is understood that the state will use the building as a highway garage. The building was erected several years ago at a cost of $100,000 and has never been used.

FIRESTONE DECLARES REGULAR DIVIDEND

Firestone Tire and Rubber Company directors ordered distribution of more than half a million dollars in dividends to holders of common stock, at the regular board meeting held September 23.

The dividend, 25 cents a share, is payable October 20 to stock of record October 1. It is the regular quarterly dividend and maintains the stock on the $1 basis, in effect for the last year and a half. There are 2,115,000 shares of common stock outstanding.

Directors also announced the election to the Firestone board of Frank H. Hobson, vice-president of Cleveland Trust Company, to succeed Harris Creech, president of Cleveland Trust, resigned.

Mr. Creech's resignation came, according to a formal statement, because of other business demands. Mr. Hobson has been associated with the Cleveland bank for twenty-five years.

Preferred stock dividends were not due for action at this meeting.

Goodrich Directors Meet

Inspection of the latest developments and processes of modern tire manufacturing featured the September meeting of B. F. Goodrich Company directors held at the company's main plant and offices in Akron, Ohio. At conclusion of the session, J. D. Tew, president of the company and also president of the Rubber Manufacturers Association, said:

"Since January, 1926, the rubber industry has faced constantly falling raw material prices, the decline being greater than that experienced by any other major industry. Today the crude rubber, cotton and fabric markets have shown unmistakable signs of improvement and this upward tendency offers fundamental encouragement to the entire industry. The recent price increase in tires and tubes is also distinctly favorable."

Rubber Shipments Up

Gross exports of crude rubber from British Malaya during September amounted to 41,973 tons, according to recent cable advices to the Rubber Exchange of New York, Inc. This compared with 39,337 tons in August, and 44,336 tons in September, 1931.

Shipments by Ceylon, to consuming countries were smaller, totaling 4,361 tons, against 5,585 tons in the month of August, and with 4,195 tons in September last year. Ceylon's exports to the United States during September were 3,003 tons, against 3,604 tons in August.

TEXTILE GROUP, A. S. T. M. WILL MEET IN AKRON

The annual fall meeting of the committee representing the textile section of the American Society for Testing Materials will be held at the Mayflower Hotel, Akron, O., October 20 and 21, S. A. Steere, of the Goodyear Tire and Rubber Company, announced recently.

Mr. Steere is head of a committee under the auspices of which the meeting will be held. Other members are H. B. Kline, of Cleveland; H. B. Pushee, of the General Tire and Rubber Company; H. C. Hebden, of the B. F. Goodrich Company; L. C. Peterson, of the India Tire and Rubber Company, and W. A. Karl, of Firestone Tire and Rubber Company.

Holding the meeting in Akron is an innovation. Hitherto the committee has always met in textile centers. On the second day of the meeting the delegates will visit the Goodyear-Zeppelin dock. About fifty are expected to attend.

Naugatuck Enlarges Laboratory

The laboratory of the Naugatuck Chemical Company, a subsidiary of the United States Rubber Company, in Naugatuck, Conn., will be expanded by the erection of a 60 x 60 foot addition to meet the demand for increased space in that plant. The addition will be of steel, brick and concrete construction and will cost about $5,000.

The project marks a second expansion on the part of the chemical company, which manufactures anti-oxidants, acids and other chemicals. About a year ago a building permit was issued for a $5,000 steel-and-frame factory building which replaced two old buildings.

Zelnicker Appoints Agent

Zelnicker, Inc., St. Louis, Mo., handlers of used, new and remodeled machinery and equipment, announce that they have appointed the U. C. Bob Kalar Company, Interstate Bank Building, New Orleans, La., as their Southern representatives. Bob Kalar was with Fairbanks, Morse & Company for twenty-five years.

Rubber Stock Quotations

	Last Price		—1932—	
	Oct. 4	Sept. 20	High	Low
Aetna	3	2	3	1½
American Hard Rubber	7	—	—	—
Faultless	25	22	25	12
Firestone	13	13	18½	10¾
do. 6% pfd.	58	59	59½	45½
Fisk	¼	¼	⅝	⅜
do. 1st pfd.	½	¾	2⅝	¾
General	35	37	45	25
do. pfd.	—	44	—	—
Goodrich	7	7¾	12⅝	2¼
do. pfd.	23½	—	33	7
Goodyear	19⅞	20¼	29¾	5½
do. 1st pfd.	22	48	69½	19¾
India	7½	6¼	7	½
Kelly Springfield	1⅝	2	2⅞	½
8% certfs. pfd.	30½	—	30	16
Lee	6¼	6¼	7⅞	2
Mohawk	3	2½	4	1
do. pfd.	16	20	—	—
Norwalk	—	1⅝	2½	⅝
Pirelli	—	33⅛	31⅝	21
Raybestos-Manhattan	9	8	12⅝	4⅞
Seiberling	3	—	4½	1
do. pfd.	16	21	22	7
Thermoid	⅝	3	4	⅞
U. S. Rubber	7	6¼	10¼	1¼
do. pfd.	12½	12	20¾	3⅝

Names in the News

EDGAR B. DAVIS, financier and prominently identified with rubber company financing and organization in the past, and lately an important figure in oil circles, is reported to have brought in a new gusher well of 2,500 barrels per day, near Buckeye, Texas. This new development is believed to have opened up a new field in the Gulf Coast area of Texas, where Mr. Davis is said to control extensive leases.

He will also be remembered as the promoter of the play "The Ladder" and the man who kept the play running on Broadway for two years at a loss said to run to $1,500,000. For the last eight months of the run the seats were offered to the public free of charge.

DONALD J. EVANS, for the past two years credit manager in the B. F. Goodrich Company branch at Cleveland, has been transferred to Atlanta, Ga., as assistant credit manager in the company's southeastern division, it was announced recently by E. A. Doerschuk, Goodrich credit manager. Mr. Evans is a graduate of Syracuse University and joined Goodrich in 1924.

M. N. TWYMAN, manager of the cotton and fabric department of the B. F. Goodrich Company purchasing department, left Akron, September 27, for the Goodrich fabric mills at Silvertown, Ga., beginning a three weeks' trip through the cotton belt. Mr. Twyman will contact for the company's 1933 cotton supply.

W. L. SCHNEIDER, B. F. Goodrich Company safety engineer, and H. W. Low, safety engineer at the Miller Rubber Company, attended the annual convention of the National Safety Congress in Washington, D. C., October 3. Mr. Schneider presented a paper on "Conveyors" and with Mr. Low took part in a play given by the safety council. Both men are members of the executive committee of the rubber section of the national organization.

H. E. VAN PETTEN, advertising manager for mechanical goods of the B. F. Goodrich Company, addressed the industrial sales division of the Cleveland Advertising Club at a recent dinner in the advertising club rooms in the Hotel Statler, Cleveland. His subject was "The Advertising Program for 1933, What Shall It Be?"

JAMES VAN WINLAND, who has been in Paris doing special auditing work for the Goodyear Tire and Rubber Company, has returned to his desk in theAkron offices of his company.

C. F. CONNER, sales promotion manager of the mechanical goods division of B. F. Goodrich Company, has been elected a national director of The American Marketing Society. Conner has been identified with Goodrich for twenty-two years.

S. M. JETT, secretary of the B. F. Goodrich Company, his son, SANDY JETT, and GEORGE OENSLAGER, Goodrich research chemist, returned to Akron recently, after a three weeks' expedition into the Canadian wilds in search of the ever elusive moose. The party went into almost unexplored territory 100 miles north of the farthest point penetrated by the Canadian National Railway in Quebec. They made many of their camps on the Gatineau River.

P. J. KELLY, assistant to C. B. O'Connor, general tire sales manager of the B. F. Goodrich Company, addressed the annual national convention of the Direct Mail Advertising Association in New York City on October 7. His subject was "What Direct Mail as a Selling Medium Means in the Distribution of Merchandise, and How We Use It."

WALLACE C. HUTTON, secretary of the Seamless Rubber Company, New Haven, Conn., was the principal speaker at the annual rally and dance of the New Haven Institute of Bankers, September 20, at the New Haven Yacht Club. Mr. Hutton's address, delivered before an audience of more than 100, was of an inspirational nature. He is a graduate of the American Institute of Banking, New York chapter, and was a banker for some years before entering the rubber industry.

O. C. REAVILL, formerly special sales representative of the B. F. Goodrich Company tire division, has been named special representative of associated tire lines of Goodrich, it was announced recently by H. E. Keller, manager of associated tire sales. Mr. Reavill has been with Goodrich for twenty-three years.

T. D. NATHAN, engineer in the mechanical goods division of the B. F. Goodrich Company, attended the convention of the American Waterworks Association in Erie, Pa., September 22, 23 and 24.

William J. Gimper

William J. Gimper, 42, general foreman of the small mold machine shop of the B. F. Goodrich Company and long a member of the company's engineering division, died suddenly at 7:30 Sunday, September 11, after a heart attack.

Born in Pittsburgh on January 15, 1890, he joined Goodrich on June 2, 1919, and was made general foreman about ten years ago. He was active in all affairs of the engineering division, taking a specially prominent part in all outings and entertainments where he was generally the center of a fun-making crowd.

Denman Plant Active

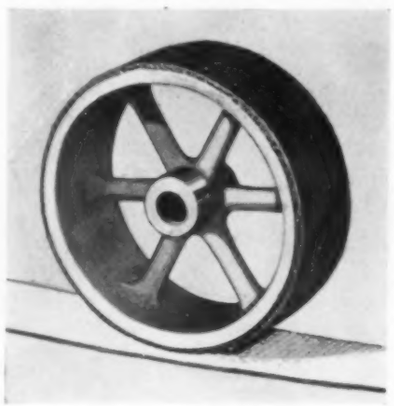
Full time operations, seven days a week, are reported in effect at the plant of the Denman Tire and Rubber Company, Leavettsburg, O. A full force of 190 workers are employed.

Rubber Goods and Specialties

Belt-Slippage Preventative

THE injurious effects of slippage on a belt drive and the loss of power and increased wear and tear on equipment through the use of overtight belts in an attempt to reduce slippage are well known.

To eliminate these troubles and to improve the efficiency of the belt drive, a covering for pulley surfaces has been developed by the Gripwell Manufacturing Company, 105 West 40th Street, New York. This sur-



facer, known as "Gripwell," which gives the effect of a rubber cushion, is designed to increase the frictional contact between the belt and pulley face, thereby reducing slippage to a minimum. It is applied to the pulley as shown in the accompanying illustration.

A number of rubber companies, as well as many other large industrial concerns have found, according to the manufacturer, that belt slippage was reduced by Gripwell to ½ of 1 per cent, whereas many ordinary belt drives fail to transmit more than 65 to 70 per cent of the available power.

Gripwell pulley-surface covering consists of a specially processed, water-proofed fabric, Gripwell Duktex, attached to the pulley with Gripwell cement. The manufacturer describes the surfacer and its functioning in more detail as follows:

Gripwell cement is a synthetic vegetable and oil compound, whose main charactertistic is a quick-drying product of great tenacious power. It is used in conjunction with Gripwell Duktex, a specially processed, waterproof treated fabric which, when applied to iron, steel, wood or paper pulleys gives the belt greater tractive power on any belt-driven machine, line shafting or main drives.

"Get-U-Out" Tire Shoe

Organization of the Merrill Hoffman Company, Grand Rapids, Mich., handling the Get-U-Out tire shoe for getting motor vehicles out of the mud, is progressing under direction of D. W. Merrill, president and general manager.

The company is to be capitalized at $15,000, of which it is proposed to have all the capital stock paid in. The tire shoes are to be manufactured by Empis Duus Foundry Company, of Grand Rapids. It is planned to have nationwide distribution.

The tire shoe is the invention of David Hoffman, who has sold his rights to Mr. Merrill, according to the latter's statement. The business was started at Albion, but has been transferred to Grand Rapids.

The device, as described by Mr. Merrill, can be used for trucks of varying tonnage as well as for automobiles and will instantly get a motor vehicle out of mud, sand or snow or off glare ice. He added that the shoe has been tested successfully by the Reo Motor Company of Lansing.

New Tire Side Wall Paint

A new finish for automobile side walls, in assorted colors to harmonize with the car color scheme, is being offered the trade by Berry Brothers, Detroit, Mich., well-known manufacturers of lacquers, varnishes and paints, under the trade name "Tirelac."

The new product has a wax base and is said to be easy to apply, very elastic, fast in color, easy to keep polished with a soft cloth, and also a good rubber preservative. Attached to the inside of the airtight screw cap of the tirelac bottle is a brush for applying.

The colors include cream, light gray, dark gray, bright red, dark red, blue, tan, green, black and white.

All-Rubber Baby Doll

The new "bubbles" all-rubber baby doll, as shown in the accompanying illustration, is manufactured exclusively by the EffanBee Doll Company, and marketed by Fleischaker and Baum, 45 Greene street, New York, N. Y. "Bubbles" with her soft all-rubber

body, arms and legs, is made in five sizes, 11 to 17 inches. She can be bathed and powdered like a real infant—and has wonderful play value. Children are enthused with the great variety of layettes which are made especially for "Bubbles."

Sole and Heel Patent

The United States Patent Office has granted to William V. Regan, of Naugatuck, Conn., a patent on a combination sole and heel for rubber footwear. Mr. Regan has assigned his patent to the Goodyear India Rubber Glove Manufacturing Company, Naugatuck, Conn., a subsidiary of the United States Rubber Company.

Sponge Rubber Truck Seat

A SOFT, resilient, serviceable sponge rubber seat for trucks has been announced by the Sponge-Aire Seat Company, Buffalo, N. Y. This new seat, upon which patents have been granted, far surpasses the ordinary coil spring seat in comfort and in addition lasts from ten to twelve times as long as a coil cushion seat. The price of a new "Sponge-Aire" seat is less than the average cost of repairing worn-

out coil cushions. By eliminating the serious vibrations of road-shock, "Sponge-Aire" minimizes the health-impairing effect of truck operation.

In the new "Sponge-Aire" seat, the varying resiliencies of different densities of sponge rubber are taken advantage of. A "Sponge-Aire" seat is usually built up of several layers, depending in number upon the particular needs of the driver. In all designs, however, the more porous layer is next to the body, forming a restful cushion for the body contour. This layer, because of its porous nature, is said to "breathe," thereby affording comfortable ventilation.

The denser layers are towards the base of the seat to absorb the heavier road-shock and chassis vibrations. These basic layers also prevent the catapulting action and side sway of ordinary spring cushions.

Rubber Strake

A new line of rubber flooring, mats and rubber strake, designed primarily for motor boats and water craft, is being offered by the Marine Rubber Company, 461 Fourth Avenue, New York City. The new rubber strake, for protection of ships' hulls when coming along side of a float or dock, is made of a special compound which will not scar or dent and preserves its resiliency indefinitely. The flooring and mats offered by the company can be procured in any color desired.

New Jar Rubbers

An interesting and well-arranged display of "Good Luck" fruit jar rubbers was exhibited at the Eastern States Exposition, Springfield, Mass., September 18 to 24, by the Boston Woven Hose and Rubber Company, of Boston, Mass. The exhibit, occupying a large space on the main floor of the Industrial Arts Building, consisted mainly of cartons of the product, attractively displayed, with a background of specimen jars of preserves, showing the use of the rings.

Rubber News Around the World

PLANTERS' SOCIETY ADVOCATES COST CUTS

The Incorporated Society of Planters of Malaya have recently published a memorandum advocating certain cuts in costs on rubber estate operations, which should well deserve the consideration of responsible heads of plantation companies.

Five separate points are singled out for concrete criticism. It is declared that the system of contracting to take all supplies through agency houses is destructive to economic buying. The complaint is that the manager of a rubber estate is confined, for his supplies, which range from tapping instruments to machinery and iron-frame buildings, to a single import department, which cannot always supply them at the cheapest rates. He frequently finds, according to the memorandum, that his neighbors are buying their supplies more cheaply.

The second suggestion is that engineers and other experts in the employment of agency houses make obligatory visits at fixed intervals, for which fees are charged. These visits might be curtailed, under present conditions, and called for as they are required.

Thirdly, it is declared that the industry continues to ship its rubber in cases, at a cost of 0.35 cent per pound. These are both costly and inconvenient. They are difficult to open. They result in the prevalence of splinters in the rubber. Above all, they are unnecessary, seeing that most consumers would prefer to receive the material in bales.

The remaining points cover payment under the heading of "shipping charges" for work the railways are declared to be willing to undertake without charge, and the dupication of costs in connection with rubber in transit from the port of destination to the consumer.

Chilean Tire Market

The Chilean tire market has fallen so steadily that it is doubtful if the entire sales for the present year will equal more than 30 per cent of those of 1931, or approximately 20 per cent of the 1929-1930 average, according to advices to the Department of Commerce. The comparative total imports of tires and tubes, in terms of weight (kilos), for the first five months of 1930, 1931 and 1932, were respectively 581,000, 432,600 and 139,653 kilos.

Rubber at British Exhibit

One of the most interesting novelties to be seen at this year's Building Trades Exhibition, London, is the new plastic rubber flooring (Bond's patent). The floor and walls of the model kitchen to be found on the Rubber Growers' Association's stand have been covered with this material, which is also used to line the sink. The latest developments in ordinary rubber flooring, which can now be supplied in patterned designs, in widths up to 6 ft., and in finishes which reduce to a minimum footmarks, etc., are also on view. One section of the Rubber Growers' Association's stand is allotted to a display of rubber as a pipe jointing medium. It is believed that the proved advantages of rubber for this purpose under extremely onerous conditions will lead, in the course of time, to its greatly extended use, if only because of simplicity of application and reduced anxiety in regard to leak tightness under all conditions when once laid. More also is likely to be heard in the future of rubber paints and rubber roofing compositions and special displays are being made of these materials.

To Buy Java Properties

It is reported in the Scandinavian press that Swedish, Finnish, Danish and Norwegian cooperative organizations plan to acquire jointly certain large rubber, coffee and copra plantations in Java to develop the production of these and other commodities for northern European markets. The properties involved are said to be cheap.

Italian Rubber Consumption

The consumption of crude rubber in Italy is generally supposed to have increased in the second quarter of the year as compared with the first three months, estimated consumption having been from 2,300 to 3,000 metric tons in the first quarter and between 2,500 and 3,400 metric tons in the second quarter, according to Department of Commerce reports. Consumption is expected to decline in the third quarter (2,000 to 3,000), with a further decline in October and November, but a pick-up in December. There are no official statistics regarding Italian manufacturers' crude rubber stocks; however, trade estimates place stocks at a fairly high figure—about 4,000 metric tons. Some trade experts think stocks are not more than 2,800 or 3,000 tons.

Italian Rubber Consumption

Italian rubber manufacturers estimate that 1932 will be a more active year in rubber productions than 1931, when rubber absorption was slightly greater than 10,000 tons. During the first six months of 1932 rubber consumption was estimated at about 4,800 to 6,400 tons, and the last half year probably will exceed these figures.

French Rubber Consumption

Rubber consumption in France in 1932 is estimated to be equal to that of 1931 by the manufacturers concerned, i.e., about 46,000 tons. Tire manufacturers consume approximately 80 or 82 per cent of French rubber imports, and tire production this year appears to be holding up to the 1931 production rate. The production of other rubber products also is estimated to be at or greater than the rate of 1931.

RUSSIAN RUBBER PLANT IS NEAR COMPLETION

Construction work on the tire factory of the Yaroslavl rubber combine was completed in August, and the installment of equipment is well under way. This factory, which is the largest in Europe, is expected to start operations this month. Its annual capacity is set at six and a half million automobile tires, and its working staff will number about 5,000 skilled workers.

The second section of the Yaroslavl synthetic rubber factory was to start operations the first of September. The capacity of the first section has been increased by one-third. By the beginning of October the plant was expected to have a daily output of 7½ tons of synthetic rubber.

The experience gained from the opening of this pioneer factory is being utilized in equipping and starting operations at two other synthetic rubber factories, Voronezh and Yefremov. The former was expected to begin partial operations by the end of August, and construction work on the latter is nearing completion. When these three factories, together with a fourth at Kazan, scheduled to open in March, 1933, are all in operation, their combined output is scheduled to reach 40,000 tons, sufficient to meet the demands of the automobile and tractor industries.

Rubber Production Up

Production of crude rubber increased on small estates in Malaya during August, while the aggregate outputs of large estates declined slightly, according to results of the census for that month, cabled to the Rubber Exchange of New York, Inc.

The report was awaited in the rubber trades with more than ordinary interest, owing to the fluctuations in prices for the commodity during the last two months, and the effects that such advances had upon production in the Far East.

Production for both large and small estates totaled 36,408 tons, compared with 35,356 tons during July, and 36,047 tons in August last year. The increase was accounted for by estates of 100 acres or less in size, who reported production of 16,124 tons, against 14,736 tons in July, and 15,106 tons in August, 1931. Estates larger than 100 acres turned out 20,284 tons, against 20,620 tons in July, and with 20,941 tons in August last year.

Estate stocks, dry basis, were 19,618 tons at the end of August, and 20,591 tons at the end of July. Dealers stocks were 22,356 tons, against 21,008 tons at the close of the previous month.

IRVING KATZ has been made Southern representative of the Essex Rubber Company, Trenton, N. J., while LEWIS LENT will cover the mid-western area. Both will handle the Essex line of soles and heels for the shoe finding trade.

Foremen's Safety Conferences

Foremen's Safety Conferences, a new publication issued by the Policyholders Service Bureau of the Metropolitan Life Insurance Company, presents an excellent method which is being used rather extensively to develop safety interest among foremen and others in supervisory positions. The report offers suggested programs for a series of seven informal conferences to discuss the various phases of safety work, these meetings being presided over by some such representative of the management as the works manager, the general superintendent, or the director of safety. The programs, which are confined to the fundamental principles of safety work, as applied to all types of industry, were developed following a review of the activites of a number of industrial organizations in the United States.

In order to provoke general discussion, a series of nine questions is presented for each of the seven conferences. To aid the conference chairman in determining the scope of each question, the purpose is presented briefly; this is followed by a condensed statement giving general information on the subject, which is intended as a guide to the presiding officer in preparing additional questions and in stimulating discussion whenever it tends to lag.

To Represent Birdsboro

Birdsboro Steel Foundry and Machine Company of Birdsboro, Penna., will be represented in Akron, Ohio, and surrounding territories after August 15th, in the exclusive sale of hydraulic machinery by Hardin D. Thweatt with offices located in the First Central Trust Building, Akron, Ohio.

Mr. Thweatt's appointment by Birdsboro follows a long period of service with both the Adamson Machine Company and the Baldwin-Southwark Corporation, as sales engineer. Mr. Thweatt is a graduate of Cornell University.

EQUIPMENT FOR SALE

10 High Pressure Cylinders

7 x 74 ft. ¾ in. Built for 180 lbs.
Suitable for Rubber & other uses,
Track on Inside—Brand New—
Very Low Price To Move Quick.

ZELNICKER, Inc.
St. Louis, Mo.

Bargains in Storage & Pressure Tanks, Oil Engines, Generators, Rails, etc.

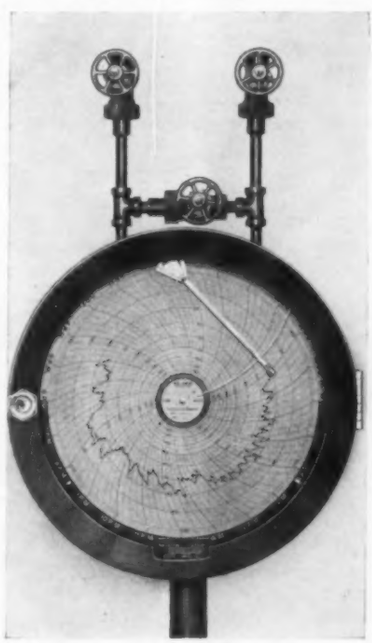
"Rubber-Heeled" Cans

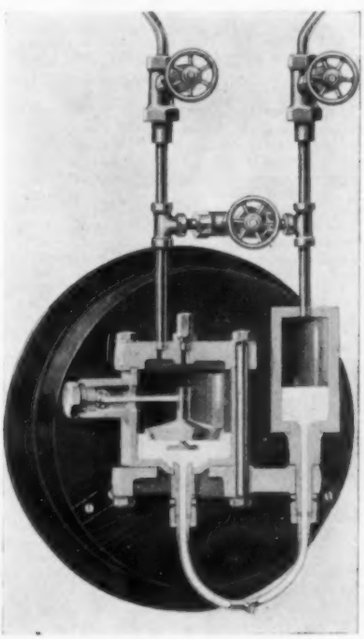
"Rubber heels" for milk churns, dust bins and buckets, etc., are being used effectively in Great Britain to silence the disturbing early morning noises of milk deliveries, ashmen and the like. The particular silencer used is the invention of a Mr. Bradley of Derby, England. They are fitted to the churns, ash-cans, etc., by means of stainless steel bands. In use, these rubber silencers have been found quite durable and particularly useful for hospitals, hotels and public institutions, where the noises of deliveries and collections of milk, coals and refuse is, so often, a noisy nuisance.

Mechanical Flow-Meter

THE Brown Instrument Company, Philadelphia, Pa., has rounded out its line of fluid measuring instruments by the addition of a series of mechanical flow meters. It is mentioned here as a series because this new flow meter has been developed in a number of combinations including: square root and evenly divided charts; automatic planimeter; multipen—flow, pressure, temperature; compensation for pressure and temperature; and automatic control and recording.

This new line of mechanical flow meters is featured by a simple direct lever-actuating mechanism, by a large powerful float, by a pressure tight bearing with grease reservoir, by a series of range tubes that permit changing the range of the meter without disturbing the orifice, and by a type of construction and assembly whereby the manometer may be taken apart and cleaned in the field without altering the calibration.





The model, as shown in the accompanying illustration, is representative of the new line. The instrument mechanism is built into a die cast aluminum case which is attached to the manometer assembly by means of a three-armed bracket that also supports the high and low pressure chambers of the manometer. The high pressure chamber is a drawn steel cup and the low pressure chamber or range tube is seamless steel tubing.

The two are connected by means of the steel U-tube shown below the high and low pressure chambers. The U-tube is provided with a drain plug at its lowest point for convenience in withdrawing the mercury from the manometer. The high pressure chamber is sealed on top by means of a gasket set in a recess in the cover and drawn against a double groove in the top edge of the high pressure chamber by means of the five heat-treated alloy steel bolts. A forged steel tee-fitting welded to the side of the high pressure chamber provides a means for mounting the pressure-tight bearing in a position for attaching the float lever on one end and the pen linkage on the other end. The float is large and powerful to the extent that there is no relative motion between the float and mercury surface and the position of the mercury surface is accurately transmitted to the recording movement. The linkages are simple and direct and so displaced that they result in an accurate calibration.

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*
SOLE PRODUCERS OF PURE ASBESTINE SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, OCTOBER 4, 1932

Crude Rubber

PRICES in the crude rubber market showed little change during the fortnight, recovering slightly from the recession which occurred during the latter part of September. In the face of continued heavy shipments from the Far East the statistical position has not been affected, although the steady decline in British stocks, mostly for Continental requirements, has been an interesting development. A slightly more active interest in the market is reported with small buyers and inquiries in greater evidence. The spurt in commodity prices, in general, as reported last month, was not maintained and industry seems still to be proceeding with caution and no little uncertainty, which condition will probably continue until after the coming elections. An encouraging feature of the situation seems to be in the activities reported from a number of smaller factories in the industry.

Prices as of October 3, as reported on the New York outside market, were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-Oct.	—	@	.03⅝
Nov.-Dec.	—	@	.03 11/16
Jan.-Mar.	—	@	.03⅞
First Latex, crepe spot	—	@	.04 5/16
Amber Crepe, No. 2	—	@	.03 5/16
Amber Crepe, No. 3	—	@	.03¼
Amber Crepe, No. 4	—	@	.03⅛
Brown Crepe, Clean thin	—	@	.03¼
Brown Crepe, rolled	—	@	.03

Latex—

Liquid Latex, per gal.	.70	@	.75

Paras—

Up-river, fine	.07	@	.07½
Up-river, coarse	Nominal		
Acre, Bolivian, fine	.07½	@	.08
Caucho Ball, Upper	—	@	.03

Centrals—

Central scrap	.04	@	—
Esmeraldas	.04	@	—

Balata—

Block, Ciudad	—	@	.18

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers

Oct.	—	@	2½d
Nov.-Dec.	—	@	2 19/32d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers

Spot	——	@	2 11/32d

Reclaimed Rubber

A better tone seems to pervade the reclaim rubber market, although prices have not been advanced. An increased demand is reported with heavier shipments going out from reclaimers than for many past months. Figures for consumption in September and this month are expected to show encouraging increases over previous nearby months.

Latest quotations remain unchanged as follows:

High Tensile

High Tensile Red	lb.	.04¾	@	.05
Super-Reclaim Black	lb.	.05	@	.05¼

Shoe

Washed	lb.	.05½	@	.05¾

Tube

No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04½	@	.04¾

Tires

Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04¼
Dark Gray		.05	@	.05¼
Light Gray	lb.	.05½	@	.06
White	lb.	.05½	@	.05¾
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½

Miscellaneous

Mechanical blends	lb.	.03	@	.03½

Scrap Rubber

Increased demand from reclaimers and a sudden spurt in export activity has encouraged the scrap market and lifted prices in a number of the standard grades. But price levels are still so low as to make accumulations by dealers very difficult. Recent reductions in certain freight rates have been helpful, however, in this connection. Late prices on the more popular grades of scrap are reported as follows:

(Prices to Consumer)

Auto tire peelings	ton	15.00	@	17.00
Mixed auto	ton	6.50	@	7.50
Clean solid truck tires	ton	22.50	@	25.00
Boots and shoes	ton	15.00	@	17.50
Arctics, untrimmed	ton	10.00	@	12.50
Inner tubes, No. 1	lb.	.02¼	@	.02½
Inner tubes, No. 2, compounded	lb.	.01⅛	@	.01¼
Inner Tubes, Red	lb.	.01½	@	.01¾
Air Brake Hose	ton	8.00	@	8.50
Rubber Hose	ton	6.00	@	8.00

Cotton

COTTON prices remained fairly steady during the last two weeks. The New York Cotton Exchange reports numerous instances of mills running day and night in both the South and New England, and is reported to represent an actual increased buying demand rather than mere production for stock. Exports are also holding up fairly well. However, the supply of available cotton is still far in excess of present or immediate future requirements and it would not seem that any great increase in prices would have justification.

High, low and closing prices on the New York Cotton Exchange, as of October 3, were as follows:

	Oct. 3 High	Oct. 3 Low	Oct. 3 Close	Sept. 19 Close
Oct.	6.98	6.81	6.98	6.75
Dec.	7.06	6.93	7.02	6.90
Jan.	7.11	6.98	7.09	——

Tire Fabrics

There are no changes reported in tire fabric prices during the last two weeks and the market remains sluggish with little buying interest in evidence. More activity is reported, however, at the mills of the larger tire companies but the independent operators report little if any improvement and sales are of the hand-to-mouth variety. Late prices follow:

(Prices Net at the Mill)

CORD

Peeler, carded, 23/4/3	lb.	.23	@	.23¼
Peeler, carded, 23/5/3	lb.	.22	@	.22¼
Peeler, carded, 13/3/3	lb.	.19	@	.19¼
Peeler, carded, 15/3/3	lb.	.20	@	.20¼
Egyptian, carded, 23/5/3	lb.	.36	@	.34
Egyptian, combed, 23/5/3	lb.	.41	@	.39

CHAFERS

Carded, American, 8 oz.	lb.	.18	@	.19
Carded, American, 10 oz.	lb.	.18	@	.19
Carded, American, 12 oz.	lb.	.18	@	.19
Carded, American, 14 oz.	lb.	.17¼	@	.18

LENO BREAKER

Carded, American, 8¼ oz.	lb.	.18	@	.21
Carded, American, 10¼ oz.	lb.	.18	@	.21

SQUARE WOVEN

Carded, American, 17¾ oz. 23-11 ply	lb.	.21½	@	.22
Carded, American, 17¼ oz. 10 ply	lb.	.17	@	.17½

Sheetings

There has been a slight improvement in the sale of sheetings. Prices in a number of constructions have receded slightly, in line with cotton levels. Latest quotations follow:

40 inch, 2.50 yard	yd.	—	@	.06¼
40 inch, 2.85 yard	yd.	—	@	.05⅞
40 inch, 3.15 yard	yd.	—	@	.05⅞
40 inch, 3.60 yard	yd.	—	@	.05⅞
40 inch, 3.75 yard	yd.	—	@	.04½
40 inch, 4.25 yard	yd.	—	@	.04¼

Ducks

Enameling	lb.	.20	@	.22
Belting and Hose	lb.	.22	@	.23
Single filling	lb.	.08	@	.08½
Double filling	lb.	—	@	.10

Closing Prices on Rubber Exchange of New York, Inc.

No 1 Standard Contract of 10 Tons"

FROM SEPTEMBER 20 TO OCTOBER 4, 1932

Date	Spot.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Sales
Sept. 20	3.40	3.28	3.33	3.38	3.44	3.50	3.57	3.64	3.68	——	68
21	3.78	3.68	3.74	3.79	3.83	3.90	3.97	4.03	4.07	——	167
22	3.73	3.64	3.69	3.74	3.78	3.85	3.91	3.97	4.02	——	176
23	3.75	3.68	3.72	3.76	3.81	3.88	3.95	4.02	4.05	——	49
24	3.88	3.77	3.77	3.86	3.96	4.02	4.09	4.17	4.20	——	37
26	3.75	3.65	3.68	3.72	3.77	3.84	3.92	4.00	4.02	——	107
27	3.72	3.63	3.63	3.70	3.78	3.85	3.91	3.98	4.02	——	104
28	3.69	——	3.57	3.65	3.73	3.79	3.85	3.92	3.96	——	24
29	3.62	——	3.53	3.60	3.67	3.74	3.81	3.88	3.92	——	69
30	3.60	——	3.52	3.58	3.65	3.73	3.80	3.87	3.93	——	41
Oct. 1	3.75	——	3.68	3.74	3.81	3.87	3.93	3.99	4.05	——	28
3	3.57	——	3.50	3.56	3.62	3.69	3.76	3.83	3.86	——	40

This contract will be superseded by "No. 1 B Standard" on April 1, 1933.

CHEMICALS

NO changes were reported in the general run of prices for rubber chemicals during the last fortnight. While sales were slow and small in quantities, there is a steady demand for standard materials which shows some signs of improvement. Smaller rubber plants have shown new activity and their requirements have been a further encouragement to the compounding material suppliers. Late quotations remain unchanged as follows:

ACCELERATORS

Organic				
A-1	lb.	.24	@	.27
A-5-10	lb.	.33	@	.36
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.64	@	.68
A-32	lb.	.80	@	.95
Aldehyde amonia, crystals	lb.	.65	@	.67
Altax	lb.			
Captax	lb.			
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyguanidine	lb.	.42	@	.43
Diphenylguanidine	lb.	.30	@	.32½
Ethylidene aniline	lb.	.45	@	.47½
Formaldehyde aniline	lb.	.37½	@	.40
Heptene	lb.	.40	@	—
Hexamethylene-tetramine	lb.	.58½	@	.59½
Lithex	lb.	.18	@	.20
Methylenedianiline	lb.	.37½	@	.40
Monex	lb.	3.25	@	—
Oxynone	lb.	.68	@	.80
Phenex	lb.	.50	@	.55
R & H 40	lb.	.40	@	.41
R & H 50	lb.	.40	@	.41
R & H 397	lb.	.75	@	.76
R-2	lb.	1.95	@	2.15
Safex	lb.	1.20	@	1.25
SPDX	lb.	.75	@	—
Super-Sulphur No. 1	lb.			
No. 2	lb.			
Tensilac, No. 39	lb.	.40	@	.42½
Tensilac, No. 41	lb.	.50	@	.52½
Thermio F	lb.	.50	@	.55
Thiocarbanilid, drums	lb.	.20	@	.22
TMTT	lb.	3.00	@	3.25
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.60
Tuads	lb.			
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Z-88-P	lb.	.50	@	.60
Zimate	lb.			
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	—
Lead, white	lb.	.08½	@	.08¾
Litharge, domestic	lb.	.05¾	@	—
Magnesia, calcined,				
light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)

Blues				
Prussian	lb.	.35	@	.36
Ultramarine	lb.	.06	@	.32
Browns				
Sienna, Italian	lb.	.05½	@	.12½
Umber, Turkey	lb.	.04½	@	.07
Greens				
Chrome, light	lb.	.30	@	.32
medium	lb.	.31	@	.33
dark	lb.	.34	@	.36
Chromium Oxide, bbl.	lb.	.34½	@	.35½
Reds				
Antimony				
crimson, 15/17	lb.	.40	@	.44
sulfur, free	lb.	.56	@	.66
golden, 15/17 F.S.	lb.	.20	@	.25
Indian English	lb.	.08	@	.11
Domestic (Maroon)	lb.	.11	@	—
Red oxide, pure	lb.	.10	@	.12
Rub-Er-Red, f.o.b. Easton	lb.	.08¾	@	—
Whites				
Lithopone, Albalith	lb.	.04½	@	.04¾
Lithopone, Azolith	lb.	.04½	@	.04¾
Titanium oxide	lb.	.21	@	—
Titanox B	lb.	.06½	@	.07
Titanox C	lb.	.06½	@	.07
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.05¾	@	.06
ZZ (leaded)	lb.	.05½	@	.05¾
Horsehead Lead Free Brand:				
Selected	lb.	.05¾	@	.06
Special	lb.	.05¾	@	.06
XX Red	lb.	.05¾	@	.06
XX	lb.	.05¾	@	.06
XX Green	lb.	.05¾	@	.06
Leaded Brand, Standard	lb.	.05½	@	.05¾
Sterling	lb.	.05½	@	.05¾
Superior	lb.	.05½	@	.05¾
Lehigh	lb.	.05¼	@	.05½
U. S. P., bbls.	lb.	—	@	.12¾
Kadox, black label	lb.	.09⅝	@	.09⅞
Blue label	lb.	.08⅝	@	.08⅞
Red label	lb.	.07¼	@	.07½
Cryptone, No. 19	lb.	.06½	@	.06¾
Cryptone CB, No. 21	lb.	.06½	@	.06¾
XX Zinc Sulphide, bbls.	lb.	—	@	.13
St. Joe, black label	lb.	.05¾	@	.06
green label	lb.	.05¾	@	.06
red label	lb.	.05¾	@	.06
Zinc Oxide—French Process				
Anaconda, lead free	lb.	.05¾	@	.06
Anaconda, selected lead free	lb.	.06¼	@	.06½
Florence White seal, bbls.	lb.	—	@	.10⅞
Green seal	lb.	.09⅝	@	.09⅞
Red seal	lb.	.08⅝	@	.08⅞
Yellows				
Chrome	lb.	.16½	@	.17
Ocher, domestic	lb.	.01⅝	@	.02

BLACKS

Arrow "Aerfloted"				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03	@	—
Bone, powdered	lb.	.05½	@	.12½
Carbon, compressed	lb.	.02¾	@	.07
uncompressed	lb.	.02¾	@	.07
"Certified," Cabot				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Disperso" f.o.b. La.	lb.	.028	@	.071
f.o.b. Texas	lb.	.02¾	@	.07
Drop, bbls.	lb.	.05½	@	.14
"Excello," compressed	lb.	.03	@	—
"Fumonex"	lb.	.02½	@	.06
"Gastex"	lb.	.02½	@	.06
Lampblack	lb.	.07	@	.10
"Micronex"				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05½	@	.07
"Supreme"	lb.	.02¾	@	—
Thermatomic—"P 33"	lb.	—		—
"Thermax"	lb.	—		—
United, "Dixie" and "Kosmos"				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Velvetex"	lb.	.02	@	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate, lump	lb.	.10½	@	.12
Asbestine	ton	13.40	@	14.00
Barium carbonate	ton	56.50	@	57.00
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	33.00	@	—
Basofor	lb.	.04½	@	—
Bentonite	lb.	.02	@	.03
Blanc fixe dry f.o.b. works	ton	75.00	@	90.00
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk, precipitated				
Suprex white, extra lt.	ton	60.00	@	70.00
heavy	ton	45.00	@	55.00
Clay, Kaolin, domestic	ton	8.00	@	9.00
Aerfloted, Suprex	ton	6.50	@	8.00
Congaree	ton	9.00	@	—
Dark Blue Ridge	ton			
Dixie	ton			
Langford	ton			
Lexington	ton	10.00	@	22.00
Par	ton			
Tensulite		15.00	@	—
Glues, extra white	lb.	.20	@	.25
medium white	lb.	.16	@	.20
Kalite No. 1	ton	30.00	@	55.00
Kalite No. 3	ton	40.00	@	65.00
Magnesia, carbonate	lb.	.08¾	@	.11
Mica	lb.	.04½	@	—
Rotten Stone (powdered)	lb.	.02	@	.05
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	—	@	2.57
Talc, domestic	ton	12.00	@	15.00
Pyrax A	ton			
Whiting, commercial	cwt.	.85	@	1.00
English cliffstone	cwt.	1.50	@	1.70
Sussex	ton			
Witco	ton	20.00	@	—
Zinc Carbonate	lb.	.09½	@	.10½
Zinc Stearate	lb.	.18½	@	.22

MINERAL RUBBER

Genasco (factory	ton	40.00	@	42.00
Granulated M. R.	ton			
Hard Hydrocarbon	ton			
Parmr, solid	ton	28.00	@	45.00
Pioneer. MR, solid	ton	40.00	@	42.00
Pioneer-granulated	ton	50.00	@	52.00
R & H Hy lro-Carbon	ton	27.05	@	29.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 66 degrees	cwt.	1.60	@	1.95
Tartaric, crystals	lb.	—	@	.26½
Acids, Fatty				
Laurex	lb.	.15	@	.16
Stearex	lb.	.08	@	.12
Stearic, double pressed	lb.	.17	@	.22
Alkalies				
Caustic soda, 76%	cwt.	2.90	@	—
Soda ash, 58% C.L.	cwt.	1.17½	@	—
Oils				
Corn, refined, bbls.	lb.	.07	@	.08¾
Cottonseed, crule		—	@	.04½
Cycline	gal.	.27	@	.34
Degras (c.l. 100 bbls.)	lb.	.03¾	@	—
Less c.l. (10-25 bbls.)	lb.	.04	@	—
Lots less than 10 bbls.	lb.	.04¼	@	.04½
Fluxrite	lb.	.05½	@	.06½
Palm Lagos	lb.	.04	@	.05
Niger	lb.	.03½	@	.04
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
Pigmentaroil	gal.	.18	@	.23
Pine, steam distilled	gal.	.54	@	.61
destructively distilled	gal.	.54	@	.55
Witco Palm Oil	lb.	.07½	@	—
Witco Softener (f.o.b. wks.)	lb.	.02	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt. bbl.		7.00	@	—
Rosin, grade K, 280 lb. bbl.		—	@	4.60
Pigmentar	gal.	.18	@	.23
Tar Retort, 50 gal.	bbl.	13.50	@	15.00
Solvents				
Acetone, pure	lb.	—	@	.10
Alcohol, denatured,				
No. 1 bbls.	gal.	.28	@	.29
Benzol, 90%	gal.	.20	@	.21
Carbon, bisulfide	lb.	.05½	@	.06¼
Carbon, tetrachloride	lb.	.06¼	@	.07
Dryolene (f.o.b. Okla.)	gal.	.10	@	.10½
Gasoline, steel bbls.	gal.	.16	@	—
Naphtha, solvent	gal.	.26	@	.28
Rub-Sol (f.o.b. Okla.)	gal.	.09	@	—
Turpentine, spirits	gal.	—	@	.37¼
wood	gal.	—	@	.40
destructively distilled	gal.	.35	@	—
Waxes				
Beeswax, white	lb.	.34	@	.36
Carnauba	lb.	.26	@	.28
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.06½	@	.07
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30
Paraffin (c.l.—f.o.b. N. Y.)				
Yellow crude scale	lb.	.02½	@	—
White crude scale 124/126	lb.	.02½	@	—
Refned, 125/127	lb.	.03⅝	@	—
Refined, 128/130	lb.	.03¾	@	—
Refined, 135/137	lb.	.05¼	@	—
Refined, 138/140	lb.	.07¼	@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.			
Powder	lb.			
Resin	lb.			
White	lb.			
Albasan	lb.	.70	@	.75
Antox	lb.			
B-L-E	lb.	.57	@	.60
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Retardex	lb.	.35	@	.40
Stabilite	lb.	.57	@	.62
Stabilite Alba	lb.	.70	@	.75
VGB	lb.	.55	@	.66

SPECIALTIES

Aromatics- Rodo	lb.			
Sunproof	lb.	.35	@	.37½
Sponge Paste	lb.	—	@	.30
Tonox	lb.	.56	@	.60

SUBSTITUTES

Black	lb.	.07	@	.09
White	lb.	.08	@	.14
Brown	lb.	.07	@	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½	@	.04½
Sulfur flour,				
Ref'n'd, 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags	cwt.	1.75	@	2.10
Telloy	lb.			
Vandex	lb.			

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

THE outstanding figures in rubber statistics today are the continuous high imports, in the face of record low prices, and the decline in tire production, with a corresponding increase in stocks of rubber on hand. Rubber consumption during August dropped to a disappointingly low mark but there are indications that this figure will show an increase for September. Stocks of crude rubber on hand and afloat to the United States reached the record high of 398,624 long tons. Reclaimed figures showed a drop from last month.

Rubber prices on the market showed slightly lower levels than at the start of September, but in the circumstances of reduced consumption it was apparent that the spurt in prices late in August could not be maintained. Cotton prices also showed a drop during the month but have returned to fairly constant levels around 7½ cents.

Automobile production figures and the number of rim inspections were also disappointing.

Latest figures covering imports and exports of crude rubber from leading consuming and producing centers have been included in the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,572	7.42	471,543
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,553,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,532	14.82	42,735
May	42,692	13,373,232	13.98	3,154	1,085,432	15.37	39,538
June	39,993	12,215,848	13.79	3,174	1,028,653	14.47	36,819
July	35,182	10,553,944	13.39	2,807	759,260	12.08	32,375
Aug.	35,713	9,666,362	12.08	2,357	655,773	12.42	33,356
Sept.	35,380	8,460,812	10.68	1,514	450,772	12.70	33,866
Oct.	46,069	9,893,980	9.59	2,432	419,325	7.70	43,637
Nov.	29,401	5,700,086	8.66	1,300	271,348	9.32	28,101
Dec.	37,300	7,175,242	8.59	2,168	542,197	11.17	35,132
1931:							
Jan.	36,307	7,190,591	8.84	1,706	350,480	9.17	34,601
Feb.	34,005	6,564,969	8.62	1,799	357,078	8.86	32,206
Mar.	40,393	7,356,505	8.13	2,800	534,180	8.52	37,593
Apr.	44,536	7,712,941	7.73	2,607	528,947	9.06	41,929
May	35,526	5,886,638	7.40	2,501	418,301	7.47	33,025
June	46,233	6,918,900	6.68	2,749	440,604	7.15	43,484
July	43,469	6,023,748	6.19	1,485	223,587	6.96	42,034
Aug.	38,669	5,138,404	5.93	2,324	345,953	6.65	36,345
Sept.	33,494	4,970,324	5.76	1,362	187,481	6.14	37,132
Oct.	41,131	4,803,582	5.21	1,527	203,574	5.95	39,604
Nov.	43,345	4,742,218	4.72	1,403	198,284	6.31	43,435
Dec.	53,536	5,610,129	4.68	2,462	326,382	5.91	51,070
1932:							
Jan.	33,221	3,337,505	4.55	1,524	185,466	5.43	31,697
Feb.	27,959	2,690,250	4.29	1,915	222,584	5.19	26,044
Mar.	45,197	4,251,801	4.19	2,227	240,128	4.84	42,970
April	37,903	3,181,343	3.74	2,128	196,984	4.53	35,775
May	34,182	2,798,914	3.71	1,505	144,561	4.30	32,677
June	40,808	2,647,085	2.89	1,981	134,336	3.02	39,136
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1925	1926	1927	1928	1929	1930	1931	1932
Jan.	29,638	32,196	31,518	34,403	43,002	36,194	28,557	27,962
Feb.	29,761	31,136	30,137	33,702	41,594	33,302	28,797	30,011
Mar.	33,498	32,936	36,141	35,688	44,730	35,540	32,788	27,828
Apr.	34,139	32,696	35,871	32,772	47,521	39,686	33,321	25,953
May	35,322	29,364	34,592	37,333	49,233	39,386	37,817	29,197
June	35,822	28,598	33,801	37,676	43,227	34,195	37,916	39,116
July	36,053	27,577	29,219	37,407	41,526	29,508	31,937	28,272
Aug.	35,909	34,533	33,460	42,927	38,274	30,850	27,586	22,372
Sept	31,691	32,904	27,214	39,882	34,707	25,515	23,638	—
Oct.	29,047	29,936	26,790	40,857	34,800	27,516	22,277	—
Nov.	28,253	28,080	26,792	37,461	27,659	23,691	22,943	—
Dec.	28,748	26,293	25,492	31,232	28,531	21,687	21,409	—
Totals	388,481	366,149	371,027	441,340	469,804	375,980	348,986	—

Figures on Quarterly Basis

Quarter	1925	1926	1927	1928	1929	1930	1931	1932
Jan./Mar.	95,263	94,301	99,216	103,558	128,565	101,610	89,652	85,309
Apr./June	104,099	87,109	103,242	103,500	139,292	112,229	107,755	92,643
July/Sept.	99,493	93,793	89,210	117,573	113,746	85,261	83,632	—
Oct./Dec.	85,789	83,212	80,860	117,597	84,872	72,020	65,645	—
Totals	384,644	358,415	372,528	442,227	466,475	371,120	346,684	—

Note—The Rubber Association estimates its monthly rubber consumption figues to be 80 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1930	1931	1932		1930	1931	1932
January	25,731	26,844	26,845	July	38,256	39,459	31,317
February	26,509	26,133	25,344	August	37,433	39,459	35,207
March	31,029	31,037	29,451	September	37,823	36,670	—
April	34,549	33,400	30,252	October	32,267	35,051	—
May	36,497	35,716	31,574	November	30,984	30,640	—
June	35,902	38,375	38,766	December	29,094	30,529	—

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1930																																
January	—	15⅞	15⅝	15⅝	—	15⅝	15⅝	15	14⅞	14½	14⅝	—	—	14⅝	14⅝	14⅝	15½	15½	—	14⅝	14⅝	14⅝	15½	15¼	15½	—	15⅝	15¼	15¼	15¼	15¼	15¼	15¼
February	—	—	—	15¾	16¼	15⅝	15⅝	16½	—	15⅞	16	—	—	15⅞	15⅝	15⅝	16⅛	16⅛	—	16⅝	16⅝	16½	—	—	—	—	—	—	—	—	—	—	—
March	15⅝	—	15⅝	15⅝	15	15⅛	15⅝	15⅝	—	15⅝	15	15	—	15⅝	15⅝	15⅝	—	15⅝	—	15⅝	15¼	16½	15⅛	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝
April	15⅝	—	15½	15¼	15¼	15¼	15¼	15¼	15⅛	15⅛	—	15⅛	—	14⅞	15	15	14¼	14⅜	—	13⅞	14	14⅞	14¼	14¼	14¼	14¼	14¼	14¼	14	—	—	14¼
May	14⅝	14⅝	14½	—	14¼	14¼	14¼	14⅝	14⅝	14⅝	—	14⅝	14⅜	14⅝	14⅝	14⅝	14¼	12	11⅞	11⅞	11⅝	11⅝	12	12⅛	12⅛	12⅛	12⅝	12⅜	—	12⅝	12⅛	12⅛
June	13⅝	13⅝	13⅝	13⅝	13	13⅜	13⅜	12⅞	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	11⅝	11⅝	11⅜	10⅞	10⅞	10⅞	10⅞	10⅞	10⅞	10⅞	10⅝	10¾	—	10½
July	12	—	12	—	—	12	12	11⅞	11⅞	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝
August	10⅝	10⅝	—	10½	10½	10½	10¼	10¼	10¼	—	10	9⅞	9⅞	10	9⅝	9⅝	—	9⅝	9½	—	9¾	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝
September	—	9⅝	9⅝	9⅝	9	8½	—	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝
October	7⅛	7⅛	8¼	8	—	7⅞	8	8	8	7⅞	8¼	8¼	8¼	7⅞	8	8	7⅞	8	8	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝
November	8¾	8¾	8¾	—	8¾	8¾	8¾	—	9¼	8¾	8¾	9¼	8¾	9¼	9¼	9	9½	9	9⅝	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼
December	9½	9½	9½	9¼	9¼	9¼	—	9⅝	9⅝	9⅝	9½	9⅝	9⅝	—	9	—	8⅞	8⅝	8⅝	8⅝	—	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝
1931																																
January	—	—	8⅝	—	—	8½	8⅝	8⅝	8⅝	8⅝	8⅝	—	8⅝	8⅝	8⅝	8⅝	8⅝	—	7⅝	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼
February	—	—	7¾	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7½	7½	7½	7½	7½	7½	7½	7½	7½	7½	7½	7½	7½
March	—	—	8	8⅛	8¼	8⅛	8⅛	8⅛	8	8	8	8	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞
April	6⅝	6⅝	—	6⅝	6⅝	6⅝	6⅝	—	—	—	—	—	6⅝	6⅝	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½	6½
May	6	6	—	—	6¼	6¼	6¼	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝	6⅝
June	6⅛	6⅛	6⅝	6⅝	6½	6½	6½	6⅝	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼
July	6⅜	6⅜	6⅜	5⅝	5⅝	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜
August	5¾	5¾	5¾	5¾	—	5⅝	5⅝	5½	5½	5½	5¾	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½
September	5⅛	5⅛	5⅛	5⅛	4⅞	4⅞	4⅞	5⅛	5	5	5	4⅞	4⅞	5	5	5	5	5	4⅞	4⅞	5	5	5	5	5	5	5	5	5	5	5	5
October	4¾	4¾	4¾	4¾	4⅝	4⅝	4⅝	4¾	4¾	4¾	4¾	4¾	4¾	4¾	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝
November	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½
December	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜
1932																																
January	—	—	—	4½	4½	4½	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4½
February	—	4⅝	4⅝	4¼	4⅛	4⅛	4⅛	—	3⅝	4⅛	4⅛	3⅝	3⅝	4⅛	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	4
March	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝
April	3	—	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
May	2⅞	2⅞	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛
June	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝
July	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼
August	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼
September	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝
October	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1925

Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45
1912	121.60	1916	72.50	1920	36.30	1924	26.20
1913	82.04	1917	72.23	1921	16.36	1925	72.46

Average Monthly Price per Pound Since 1926

Month	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents
Jan.	79.50	38.75	40.25	20.14	15.24	8.34	4.38
Feb.	62.25	38.25	32.75	23.97	15.85	7.70	4.03
Mar.	59.00	41.04	26.82	24.55	15.34	7.71	3.35
Apr.	51.25	40.86	18.97	21.18	14.93	6.43	3.02
May	47.75	40.76	18.99	21.46	14.24	6.49	3.09
June	42.50	37.25	19.59	20.64	12.45	6.35	2.66
July	41.03	34.87	19.40	21.30	11.24	6.37	2.89
Aug.	48.50	35.12	19.46	20.59	9.96	5.38	3.63
Sept.	41.00	33.67	18.47	20.37	8.28	5.08	3.84
Oct.	42.50	34.32	18.83	19.67	8.20	4.87	—
Nov.	38.50	37.58	18.26	16.62	9.01	4.65	—
Dec.	38.25	40.63	17.97	16.12	9.05	4.64	—
Average for Year	48.50	37.72	22.48	20.55	11.98	6.17	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.
1	1 11/16	—	2⅞	2⅝	17	—	2 7/16	2 17/32	—
2	1 11/16	2⅛	2 27/32	—	18	1⅞	2⅝	—	—
3	—	2 3/16	3 1/32	2½	19	1⅞	2 7/16	2 7/16	—
4	1¾	2¼	—	—	20	1⅞	2 7/16	2⅝	—
5	1¾	2¼	3 1/16	—	21	1⅞	—	2 9/16	—
6	1 13/16	2 5/32	3 11/32	—	22	1⅞	2 13/32	2 11/16	—
7	1 13/16	—	3	—	23	1⅞	2 15/32	2 21/32	—
8	1 13/16	2 9/32	2 15/16	—	24	1⅞	2½	2 23/32	—
9	1 13/16	2¼	2⅞	—	25	—	2 11/16	—	—
10	—	2 5/16	2¾	—	26	1 5/16	2 21/32	2⅝	—
11	1⅞	2 7/16	—	—	27	1 1/16	2 21/32	2 19/32	—
12	1⅞	2⅝	2 11/16	—	28	2 1/16	—	2 21/32	—
13	1⅞	2⅝	2 19/32	—	29	2 1/16	3 1/32	2 19/32	—
14	1⅞	—	2 23/32	—	30	2 1/16	3 1/32	2⅝	—
15	1⅞	2 7/16	2 17/32	—	31	—	2 29/32	—	—
16	1⅞	2½	2 19/32	—					

Average Monthly Price Per Pound

Month	1929 Pence	1930 Pence	1931 Pence	1932 Pence	Month	1929 Pence	1930 Pence	1931 Pence	1932 Pence
Jan.	9.942	7.471	4.160	3.052	Aug.	10.505	4.880	2.385	2.654
Feb.	11.875	7.948	3.823	2.760	Sept.	10.160	4.075	2.524	—
Mar.	12.135	7.595	3.822	2.047	Oct.	9.620	4.023	2.898	—
Apr.	10.490	7.391	3.082	1.876	Nov	8.442	4.440	2.890	—
May	10.717	6.926	3.035	1.825	Dec.	7.958	4.516	3.115	—
June	10.580	6.195	3.082	1.750	Average for				
July	11065	5.648	3.048	1.875	Year	10.291	5.926	3.155	—

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Aug.	Sept.	Oct.	Day of Month	Aug.	Sept.	Oct.	Day of Month	Aug.	Sept.	Oct.
1	6.05	8.30	7.05	11	7.15	—	—	21	—	7.50	—
2	5.90	8.75	—	12	7.15	7.75	—	22	—	7.75	7.55	—
3	5.90	8.90	7.15	13	7.35	7.40	—	23	—	7.80	7.35	—
4	5.90	—	—	14	—	7.25	—	24	—	8.30	7.45	—
5	6.00	—	—	15	7.50	7.25	—	25	—	8.45	—	—
6	6.20	8.95	—	16	7.55	7.05	—	26	—	8.65	7.50	—
7	—	7.00	—	17	7.45	6.80	—	27	—	9.20	7.50	—
8	7.05	7.95	—	18	7.60	—	—	28	—	—	7.40	—
9	7.00	8.10	—	19	7.50	6.90	—	29	—	9.20	7.00	—
10	7.51	8.10	—	20	7.60	6.95	—	30	—	8.70	7.25	—
								31	—	8.40	—	—

Average Monthly Price Per Pound

Month	1929 Cents	1930 Cents	1931 Cents	1932 Cents	Month	1929 Cents	1930 Cents	1931 Cents	1932 Cents
Jan.	20.22	17.21	10.27	6.65	Aug.	18.62	12.03	7.21	7.43
Feb.	20.21	15.62	10.96	6.85	Sept.	18.83	10.85	6.52	7.682
Mar.	20.19	15.13	10.90	6.86	Oct.	18.46	10.63	6.32	—
Apr.	20.29	16.39	10.19	6.16	Nov.	17.53	10.96	6.44	—
May	19.41	16.43	9.38	5.72	Dec.	17.28	10.02	6.24	—
June	18.74	14.48	9.05	5.22	Average for				
July	18.62	13.10	9.28	5.87	Year	19.03	13.57	8.56	—

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1930	ON HAND 1931	ON HAND 1932	AFLOAT 1930	AFLOAT 1931	AFLOAT 1932	ON HAND AND AFLOAT 1930	ON HAND AND AFLOAT 1931	ON HAND AND AFLOAT 1932
Jan.	131,744	209,487	322,860	61,863	56,187	42,234	193,607	265,674	365,094
Feb.	143,863	212,833	322,117	63,404	63,680	51,728	207,267	276,513	373,845
Mar.	141,843	217,804	334,566	63,646	63,133	44,190	205,489	280,937	378,756
Apr.	143,272	228,382	343,099	63,261	56,700	40,387	211,533	285,082	383,486
May	146,149	220,799	346,231	68,168	73,564	50,453	214,347	294,363	396,684
June	151,561	225,536	345,702	58,657	69,421	43,079	210,209	294,957	388,781
July	152,001	234,822	345,927	58,326	66,873	37,894	210,327	301,695	383,821
Aug.	158,604	240,816	357,342	61,168	61,469	41,282	219,772	302,285	378,624
Sept.	169,927	254,324	——	60,923	62,420	——	230,851	316,744	——
Oct.	185,470	273,456	——	51,122	68,427	——	236,593	341,883	——
Nov.	189,925	292,493	——	52,538	77,443	——	242,463	369,936	——
Dec.	200,998	322,826	——	56,035	53,940	——	257,033	376,766	——

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1930	1931	1932	At end of	1930	1931	1932
Jan.	60,434	81,093	67,166	July	81,048	81,317	48,842
Feb.	64,557	82,265	65,942	Aug.	80,931	81,560	47,079
Mar.	68,923	84,736	64,280	Sept.	83,329	79,692	——
Apr.	74,676	86,982	61,848	Oct.	77,647	76,778	——
May	77,312	86,726	56,089	Nov.	76,887	73,911	——
June	80,260	83,071	51,009	Dec.	78,013	69,470	——

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1932					
January	69,504	68,967	68,272	67,545	67,157
February	67,410	67,824	67,314	65,928	
March	65,459	65,121	65,014	64,461	
April	63,812	64,015	63,717	63,348	61,850
May	61,411	58,101	58,606	56,504	
June	55,535	54,636	52,636	51,785	
July	50,656	50,188	49,327	49,105	48,833
August	48,980	47,713	46,985	47,052	
September	46,982	45,325	46,176	44,986	
October	44,972				

Stocks in Liverpool

1932					
January	57,718	57,652	58,662	58,328	58,182
February	59,155	59,874	59,514	59,868	
March	60,288	60,776	60,922	60,775	
April	61,010	60,872	61,302	61,433	61,480
May	61,674	60,909	60,583	60,148	
June	60,119	59,551	58,601	58,441	
July	58,569	58,335	57,622	57,618	57,366
August	58,019	57,762	57,542	57,448	
September	58,080	57,965	58,028	58,004	
October	58,261				

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1929	1930	1931	1932	End of	1929	1930	1931	1932
Jan.	29,617	39,727	48,802	48,850	July	38,859	45,459	51,203	17,017
Feb.	32,373	44,371	49,283	46,954	Aug.	30,834	48,132	48,971	20,649
Mar.	29,437	45,657	49,590	46,591	Sept.	32,138	44,015	47,025	——
Apr.	26,474	48,473	45,868	39,663	Oct.	33,770	39,930	52,132	——
May	30,764	44,715	44,278	38,690	Nov.	30,963	41,674	46,497	——
June	30,403	42,461	47,517	19,770	Dec.	35,548	45,963	45,795	——

STOCKS IN OTHER CENTRES

End of 1932:	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	43,938	19,090	3,065	3,956	6,342
Feb.	43,695	18,920	3,093	3,591	6,641
Mar.	43,329	17,470	3,172	3,172	6,378
Apr.	42,642	15,660	3,404	3,407	6,469
May	45,422	17,870	3,427	3,768	6,438
June	43,994	20,240	3,274	3,727	5,982
July	44,599	20,000	2,996	3,781	5,829
Aug.	41,974	20,000	2,625		

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,868,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.3
1926	24,199,534	78.8	1930	17,364,096	80.1
1931			1931		
January	681,301	67.9	July	812,642	74.0
February	1,010,774	72.9	August	924,236	80.3
March	1,425,336	81.4	September	504,879	70.4
April	1,717,652	79.9	October	281,749	62.7
May	1,508,349	82.7	November	638,128	78.0
June	1,084,707	77.8	December	714,037	80.1
1932			1932		
January	810,759	89.0	July	338,725	82.2
February	726,172	84.3	August	221,913	53.8
March	648,013	81.6	September		
April	652,126	69.8	October		
May	657,995	74.0	November		
June	499,441	82.3	December		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1924	1925	1926	1927	1928	1929	1930	1931
Production	51,633	60,845	61,237	64,439	77,944	68,726	50,965	48,739
Shipments	50,120	59,262	59,002	64,059	74,296	69,395	53,638	48,151
Inventory[2]	7,427	8,142	10,456	10,264	13,624	11,838	9,003	110,233

Figures for Recent Months

	PRODUCTION 1930	1931	1932	SHIPMENTS 1930	1931	1932	INVENTORY 1930	1931	1932
Jan.	4,485	3,675	3,462	4,406	3,744	3,253	11,925	8,957	7,912
Feb.	4,555	3,985	3,871	4,195	3,402	2,553	11,410	9,536	9,172
Mar.	4,863	4,663	3,671	4,717	4,122	2,954	12,513	10,014	9,878
Apr.	5,648	4,944	3,517	5,089	4,932	3,698	13,076	10,031	9,846
May	5,717	5,679	3,820	5,216	5,415	4,258	13,432	10,312	9,379
June	5,122	5,672	5,643	5,294	5,572	10,367	13,277	10,447	4,625
July	3,991	4,926	3,617	5,447	5,462	2,404	11,812	9,919	6,203
Aug.	4,166	3,906	——	5,175	4,960	——	10,848	8,896	——
Sept.	3,365	3,172	——	4,405	3,932	——	9,812	8,158	——
Oct.	3,582	2,974	——	3,499	2,852	——	9,803	8,300	——
Nov.	2,654	2,500	——	2,834	2,887	——	9,595	7,919	——
Dec.	2,814	2,643	——	3,361	2,871	——	9,003	7,744	——

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1924	1925	1926	1927	1928	1929	1930	1931
Production	70,706	82,614	76,618	70,823	80,180	68,829	52,420	48,333
Shipments	68,106	81,004	71,591	72,896	77,127	70,592	54,938	50,021
Inventory[2]	11,052	11,313	16,200	13,692	16,117	12,807	9,999	112,121

Figures for Recent Months

	PRODUCTION 1930	1931	1932	SHIPMENTS 1930	1931	1932	INVENTORY 1930	1931	1932
Jan.	4,607	3,623	3,308	4,857	4,062	3,529	12,704	9,439	7,719
Feb.	4,634	3,916	3,521	4,337	3,400	2,728	13,036	9,921	8,760
Mar.	4,941	4,450	3,502	4,727	3,789	2,686	13,179	10,475	9,448
Apr.	5,510	4,617	3,225	4,848	4,636	3,385	13,784	10,413	9,441
May	5,535	5,413	3,409	5,074	5,281	3,867	13,852	10,549	8,913
June	4,950	5,358	5,279	5,265	5,397	9,243	13,612	10,504	4,929
July	3,939	4,955	——	5,855	5,831	——	11,657	9,589	——
Aug.	4,796	4,435	——	5,762	5,301	——	10,787	8,774	——
Sept.	3,817	3,449	——	4,541	4,150	——	10,065	8,095	——
Oct.	3,951	3,077	——	3,472	2,813	——	10,517	8,321	——
Nov.	2,680	2,443	——	2,788	2,594	——	10,313	8,119	——
Dec.	3,060	2,597	——	3,412	2,767	——	9,999	7,922	——

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,391
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931							
Jan.	171,848	138,317	33,531	6,496	4,552	1,944	178,344
Feb.	219,940	180,419	39,521	9,871	7,529	2,342	229,811
Mar.	276,405	231,244	45,161	12,993	10,483	2,510	289,398
Apr.	336,939	285,693	50,015	17,159	14,043	3,116	354,098
May	317,163	269,420	45,695	12,738	10,621	2,117	329,901
June	250,640	208,158	41,304	6,835	5,583	1,252	257,475
July	218,490	183,107	35,854	4,220	3,151	1,069	222,710
Aug.	187,197	155,425	31,772	4,544	3,426	1,118	191,741
Sept.	140,566	109,228	31,338	2,646	2,108	538	143,212
Oct.	80,142	58,415	21,727	1,440	761	679	81,582
Nov.	68,867	49,184	19,683	1,247	812	435	70,114
Dec.	121,533	97,897	23,636	2,432	408	2,024	123,965
Total	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932							
Jan.	119,344	98,785	20,541	3,731	3,112	619	123,075
Feb.	117,418	94,110	23,308	5,477	4,494	983	126,621
Mar.	118,959	99,399	19,560	8,318	6,604	1,714	127,277
May	185,149	157,756	27,933	8,221	7,269	952	193,370
June	183,092	160,330	27,754	7,112	6,308	804	190,204
July	111,139	94,705	16,434	7,472	6,773	699	118,611
Aug.	90,324	75,907	14,417	4,067	3,166	901	94,391

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	62,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931:															
Jan.	41,579	11,029	30,550	7,039	1,315	770	542	424	5,923	7,348	10,328	1,218	994	295	66,746
Feb.	41,951	9,672	32,279	6,365	1,041	945	542	409	4,869	7,206	9,001	1,018	1,271	217	65,163
Mar.	48,589	12,009	36,580	5,881	1,209	930	542	536	5,434	7,104	11,258	1,233	1,338	430	72,475
Apr.	43,453	9,977	33,476	4,333	641	788	455	340	6,473	6,063	8,759	327	629	333	62,617
May	44,281	10,479	33,802	4,242	622	869	455	413	7,373	6,799	10,955	793	1,110	382	67,815
June	39,397	12,115	27,282	5,098	1,086	1,138	455	337	5,856	6,696	11,380	1,019	621	351	61,319
July	43,658	11,995	31,663	4,517	715	801	536	316	6,671	7,511	10,711	859	1,565	186	66,051
Aug.	42,832	9,063	33,769	3,763	406	692	535	210	6,397	7,044	8,641	1,097	856	241	63,651
Sept.	44,336	8,369	35,967	4,029	169	701	535	218	5,577	7,358	8,389	917	745	183	64,788
Oct.	45,911	9,955	35,956	5,547	286	872	500*	338	8,086	7,882	9,547	934	1,284	238	71,467
Nov.	48,012	9,529	38,483	4,609	408	830	500*	390	7,351	8,174	7,981	731	872	233	70,562
Dec.	35,741	11,314	24,427	6,346	572	1,115	500*	287	5,942	8,562	9,059	1,550	836	203	59,399
1932:															
Jan.	44,538	10,304	34,234	4,570	732	756	500*	457	5,155	8,815	8,703	1,248	831	199	66,200
Feb.	42,008	8,008	34,000	4,472	803	696	500*	334	4,814	6,011	6,325	1,096	352	203	59,606
Mar.	39,903	6,658	33,245	3,405	284	501	500*	217	4,946	6,863	6,252	928	715	77	57,933
Apr.	36,670	4,682	31,988	3,046	365	459	500*	130	6,722	6,090	4,856	913	487	99	55,655
May	40,297	5,677	34,620	4,140	304	595	500*	118	6,552	6,551	6,013	949	416	278	61,036
June	36,566	5,665	30,901	3,620	359	481	500*	166	5,610	7,516	5,507	1,231	394	139	56,424
July	40,723	5,346	35,377	3,125	99	442	500*	184	5,779	6,257	6,145	974	232	141	59,255
Aug.	39,367	7,371	31,966	5,585		506	500*	300	4,803	4,882	7,244	1,164	303	140*	
Sept.	41,973			4,361											

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931:															
Jan.	34,873	9,730	5,954	3,847	1,709	2,861	1,036	1,775	601	986	348	464	240	635	65,059
Feb.	32,572	12,226	4,510	3,374	1,927	3,264	1,393	1,022	495	785	157	476	201	366	62,768
Mar.	37,960	12,335	4,386	3,545	3,012	2,328	418	2,531	435	862	346	400	392	507	69,452
Apr.	42,212	9,440	4,346	3,054	2,070	3,478	528	1,450	457	515	333	495	208	324	68,910
May	33,271	8,212	2,880	3,231	2,748	3,755	1,028	1,034	884	1,153	86	495	180	711	58,663
June	43,730	5,636	4,002	3,504	2,112	2,988	1,462	3,279	1,112	1,058	272	577	207	607	70,546
July	42,293	5,366	3,301	3,226	2,592	3,065	809	3,141	627	1,507	41	429	145	1,074	67,816
Aug.	36,709	5,030	3,393	2,889	2,304	3,780	812	3,137	288	955	—57	321	160	413	60,129
Sept.	37,571	5,468	4,420	4,227	1,535	5,556	693	2,335	269	1,015	191	571	99	499	64,449
Oct.	39,820	5,775	3,909	3,220	1,567	3,980	571	4,076	765	792	185	710	193	695	66,258
Nov.	43,659	2,550	2,669	2,621	1,233	3,340	545	2,417	934	729	183	745	297	954	62,876
Dec.	51,323	4,402	2,696	2,950	2,452	5,093	859	4,474	787	652	135	677	283	932	77,715
1932:															
Jan.	32,028	3,248	2,588	3,303	1,746	5,782	627	3,258	622	521	479	840	462	197	55,701
Feb.	26,483	5,930	2,893	4,356	1,723	6,781	1,189	2,931	758	506	500	708	313	306	55,382
Mar.	43,361	3,585	2,482	3,436	2,588	5,398	1,423	2,745	1,211	721	112	456	359	644	68,521
Apr.	36,326	6,826	2,956	3,737	1,600	3,684	1,083	764	1,549	847	348	474	417	1,259	61,870
May	32,818	1,110	2,277	3,447	1,416	3,917	1,033	3,743	2,048	617	286	707	272	350	54,041
June	39,136	1,853	3,666	3,405	2,834	2,834	1,534	5,291	1,421	449	127	578	196	280	63,604
July	30,494	4,081	3,125	3,380	1,529	2,544	1,116		624	723	—214	784	258	1,207	
Aug.	32,650	6,672				3,390									

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$45,615,000
1925	23,958,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1930	42,681,000	178,059,000	29,514,000	58,465,000
1931:				
July	3,337,000	15,361,000	2,864,000	3,706,000
August	3,787,000	16,293,000	2,933,000	3,356,000
September	4,692,000	15,827,000	2,880,000	3,015,000
October	4,112,000	14,567,000	2,610,000	2,678,000
November	2,529,000	11,455,000	2,840,000	2,300,000
December	2,074,000	14,133,000	3,639,000	2,281,000
1932:				
January	2,184,000	12,317,000	3,411,000	2,463,000
February	2,448,000	14,437,000	3,461,000	2,446,000
March	2,463,000	16,368,000	3,953,000	2,638,000
April	2,092,000	11,737,000	2,292,000	2,613,000
May	1,748,000	10,259,000	2,488,000	2,542,000
June	2,243,000			

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	987,038	8,332	2,213,964	—	—
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	—	—
1921	58	26,945	814	1,077,859	1,745	351,893	—	—
1922	127	57,040	812	978,785	2,335	403,812	—	—
1923	1,155	542,227	760	898,524	4,565	853,308	—	—
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	2,781	1,803,448	517	574,750	6,749	1,642,531	3,553	3,537,310
1926	4,805	2,562,096	354	327,213	7,263	3,127,757	3,382	4,690,386
1927	5,018	2,674,957	582	447,246	7,785	2,445,857	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,455,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1931:								
July	—	—	67	20,777	331	64,493	583	104,868
Aug.	—	—	73	30,207	652	100,536	364	60,358
Sept.	—	—	126	35,174	407	65,232	439	72,443
Oct.	—	—	100	13,846	415	75,219	267	43,238
Nov.	—	—	36	11,539	276	50,062	265	40,649
Dec.	—	—	93	37,315	643	62,657	282	41,771
1932:								
Jan	—	—	54	14,095	633	81,396	331	40,613
Feb.	—	—	100	24,702	558	84,914	439	52,183
Mar.	—	—	114	20,628	460	59,299	391	44,585
Apr.	—	—	46	10,909	317	44,165	551	46,397
May	—	—	42	9,863	566	68,028	141	27,449
June	—	—	38	9,483	330	47,077	309	28,800
July	—	—	26	7,934	372	52,116	218	37,327
Aug.	—	—	36	8,885	367	46,926	540	59,178

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

		Consumption					Consumption			
Year	Production	Tons	% to Crude	Stocks*	Year	Production	Tons	% to Crude	Stocks*
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1925	132,930	137,105	35.6	18,203	1930	157,967	153,497	40.8	22,000
1931:									
Jan.	10,849	10,728	37.6	22,429	July	11,393	11,447	35.8	17,720
Feb.	10,871	10,800	37.5	18,878	Aug.	10,110	9,972	36.2	17,165
Mar.	12,988	12,524	38.3	19,375	Sept.	9,629	8,932	37.6	17,226
Apr.	13,267	11,745	35.0	19,356	Oct.	9,482	8,126	36.6	17,741
May	13,478	13,168	34.6	18,088	Nov.	7,892	7,492	32.6	17,662
June	14,066	13,045	34.4	18,505	Dec.	8,876	6,812	31.8	19,257
1932:									
Jan.	8,753	8,440	30.2	19,712	July	5,417	5,131	18.1	16,333
Feb.	8,731	8,332	27.7	18,689	Aug.	3,264	4,382	18.6	14,629
Mar.	8,613	7,420	26.7	19,721	Sept.				
Apr.	5,561	5,555	21.6	21,525	Oct.				
May	5,024	6,070	20.8	18,889	Nov.				
June	5,923	7,031	18.0	16,870	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.
(Rubber Manufacturers' Association figures raised to 100%)

REVIEW DESK

Books, New Publications, Catalogues, Etc.

LATEX PRESERVATION AND SHIPMENT. Planting Manual No. 4. Rubber Institute of Malaya, Kuala Lumpur, F. M. S., July, 1932. $2. (Straits).

The booklet, under the joint authorship of R. O. Bishop and R. G. Fullerton, treats the subject from the standpoint of the practical estate manager and attempts to present all available information in a concise and suitable form for those engaged in, or contemplate undertaking, the shipment of ammoniated latex under standard conditions. The book is very comprehensive and well illustrated.

TETRONE A. Laboratory Report No. 157. Rubber Chemical Section, E. I. duPont de Nemours and Company. 7 pp. August 1932. For free distribution.

This brochure is a summary of the laboratory tests in connection with the application of Tetrone A. to various rubber compounds. Tetrone A is a new accelerator, derived from piperidine, and has been developed by the duPont company primarily for vulcanization without added sulfur. Its full chemical name is di-pentamethylenethiuramtetrasulfide. A full description of the new product was given in THE RUBBER AGE, August 25, 1932.

DIELECTRIC CONSTANT AND POWER FACTOR OF VULCANIZED RUBBER. Donald W. Kitchin. Reprinted by Simplex Wire and Cable Company, Boston, Mass., 1932. 18 pp. For free distribution.

The pamphlet is a reprint of the fifth of a series of "Studies in the Vulcanization of Rubber," published in *Industrial and Engineering* Chemistry, during the early part of 1932. This particular paper deals with two important dielectric properties of vulcanized rubber-dielectric constant and power factor. These electrical properties vary greatly with composition, frequency and temperature.

INTERNATIONAL ASSOCIATION FOR RUBBER AND OTHER CULTIVATIONS IN THE NETHERLANDS INDIES. Eighteenth Annual Report, 1931 and the Ninth Annual Report of the Propaganda Department of the Association. Both available free upon request to the Association offices, N. Doelenstraat 5, Amsterdam.

The two reports constitute a comprehensive review of the work of the Association during the past year and contain full information on the status of the rubber industry in the Dutch East Indies at the present time.

PRODUCTS OF MANUFACTURING INDUSTRIES. Census of Distribution. Fifteenth Census of the United States, 1929. Department of Commerce, Washington, D. C. 169 pp. 1932.

The report is compiled for the use of manufacturers and others, as an aid to the survey of commodity manufacture and particularly as a help in market analyses. It shows in detail the production, in quantity and value, of commodities as classified by the Census of Manufactures, as well as the number of establishments engaged in their production. The sections devoted to rubber products are especially complete and informative.

FOREMEN'S SAFETY CONFERENCES. Programs for a Series of Seven Foremen's Conferences on Safety. Policyholders Service Bureau. Metropolitan Life Insurance Company. 24 pp. 1932. For free distribution.

The publication presents one method which is being used rather extensively to develop safety interest among foremen and others in supervisory positions. The report offers suggested programs for a series of seven informal conferences to discuss the various phases of safety work, these meetings being presided over by some such representative of the management as the works manager, the general superintendent, or the director of safety. The programs, which are confined to the fundamental principles of safety work as applied to all types of industry, were developed following a review of the activities of a number of industrial organizations in the United States. In order to provoke general discussion, a series of nine questions is presented for each of the seven conferences. To aid the conference chairman in determining the scope of each question, the purpose is presented briefly; this is followed by a condensed statement giving general information on the subject, which is intended as a guide to the presiding officer in stimulating discussion.

ANNUAL REPORT—RUBBER RESEARCH INSTITUTE OF MALAYA, 1931. Kuala Lumpur, F. M. S. 1932. 134 pp. $1.00 (Straits).

An official review of the past year's activities in Malaya during a most trying period for the rubber industry in general and research work in particular.

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Cheap Foreign Goods

THE question again comes up whether it is desirable to earnestly enter into competition with cheap foreign rubber goods or hold to our standards of quality, which necessarily entails higher prices. At this particular time, when the buying public is watching every penny and making the dollar stretch as far as it can, the question whether the manufacturer should concentrate on cheaper quality goods is a highly debatable one. One side of the question is discussed in detail in this issue of THE RUBBER AGE.